In Two Sections Section 1

The EDISON ELECTRIC INSTITUTE BULLETIN

January 1953

JAN 13 1953

Electric Industry in 1952
B. L. England

The Socialist Power Program
C. B. Boulet

Packaged Air Conditioners
B. M. Gallaher

Reservoirs for Recreation
Thomas J. Rouner

EEI Resuscitation Awards

blished Monthly by Edison Electric Institute

ELECTRICAL RESEARCH STATISTICS
THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

September, 1951-1952

SOURCE AND DISPOSAL OF ENERGY—MONTH OF SEPTEMBER

	1952	1951	%
GENERATION* (Net)			
By Fuel Burning Plants	26,018,910,000	23,221,925,000	+12.4
By Water Power Plants	7,357,050,000	7,032,394,000	+ 4.6
Total Generation	**33,375,960,000**	**30,254,319,000**	**+10.3**
Add—Net Imports Over International Boundaries	116,405,000	74,301,000	+56.7
Less—Company Use	112,153,000	107,734,000	+ 4.1
Less—Energy Used by Producer	555,646,000	674,442,000	−17.6
Net Energy for Distribution	**32,824,566,000**	**29,546,444,000**	**+11.1**
Lost and Unaccounted for	3,384,374,000	2,768,946,000	+22.2
Sales to Ultimate Customers	**29,440,192,000**	**26,777,498,000**	**+ 9.9**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of September 30			
Residential or Domestic	40,338,392	38,808,125	+ 3.9
Rural (Distinct Rural Rates)	1,694,994	1,653,232	+ 2.5
Commercial or Industrial:			
Small Light and Power	5,628,562	5,524,360	+ 1.9
Large Light and Power	258,929	248,093	+ 4.4
Other Customers	157,160	160,732	− 2.2
Total Ultimate Customers	**48,078,037**	**46,394,542**	**+ 3.6**
KILOWATTHOUR SALES—During Month of September			
Residential or Domestic	6,816,502,000	6,064,511,000	+12.4
Rural (Distinct Rural Rates)	1,014,597,000	980,119,000	+ 3.5
Commercial or Industrial:			
Small Light and Power	5,501,285,000	5,030,324,000	+ 9.4
Large Light and Power	14,680,601,000	13,321,175,000	+10.2
Street and Highway Lighting	287,246,000	268,753,000	+ 6.9
Other Public Authorities	698,375,000	659,362,000	+ 5.9
Railways and Railroads:			
Street and Interurban Railways	229,625,000	245,446,000	− 6.5
Electrified Steam Railroads	168,666,000	168,007,000	+ 0.4
Interdepartmental	43,295,000	39,801,000	+ 8.8
Total to Ultimate Customers	**29,440,192,000**	**26,777,498,000**	**+ 9.9**
Revenue from Ultimate Customers	**$521,494,900**	**$476,635,100**	**+ 9.4**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended September 30			
Kilowatthours per Customer	2,131	1,961	+ 8.7
Average Annual Bill	$59.03	$55.50	+ 6.4
Revenue per Kilowatthour	2.77¢	2.83¢	− 2.1

* By Courtesy of the Federal Power Commission.

THE EDISON ELECTRIC INSTITUTE BULLETIN is published monthly by the Edison Electric Institute, an association of electric light and power companies in the United States and its territorial possessions. Its affiliate members consist of members of the Canadian Electrical Association.

The objectives of the Edison Electric Institute are:

The advancement in the public service of the art of producing, transmitting, and distributing electricity and the promotion of scientific research in such field.

The ascertainment and making available to the members and the public of factual information, data, and statistics relating to the electric industry.

To aid its operating company members to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, giving due regard to the interests of consumer, investor, and employee.

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Closing date for the BULLETIN is the tenth of the month preceding the month of issue.

Manuscripts and correspondence relating to the BULLETIN should be addressed to the Editor, Edison Electric Institute, 420 Lexington Avenue, New York 17, N. Y.

The Edison Electric Institute does not assume responsibility for, nor necessarily endorse or approve, statements made by contributors to the BULLETIN.

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Subscription price of the BULLETIN is $2.00 per year in the United States; $3.00 per year in foreign countries.

Entered as second-class matter, August 17, 1933, at the post office at Philadelphia 2, Pa., under the act of March 3, 1879. Publication office, 56th and Chestnut Sts., Philadelphia 39, Pa. Editorial office, 420 Lexington Ave., New York 17, N. Y. Volume 21, No. 1, 1953.

The EDISON ELECTRIC INSTITUTE BULLETIN

January, 1953

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CONVENTIONS AND MEETINGS

1953

JANUARY

12-13 EEI Accident Prevention Committee, Hotel Muehlebach, Kansas City, Mo.
12-13 EEI Merchandising Committee, Detroit, Michigan
15 EEI Industrial Relations Committee, EEI Headquarters, New York, N. Y.
15-16 CEA Engineering and Operating Division Meeting, Nova Scotian Hotel, Halifax, N.S.
15-16 PEA Stores Committee, New Castle, Pa.
15-16 EEI Dealer Coordination Committee, Tutwiler Hotel, Birmingham, Ala.
19-23 AIEE Winter General Meeting, Hotel Statler, New York, N. Y.
22-23 CEA Sales Division Meeting, General Brock Hotel, Niagara Falls, Ont.
27-28 EEI Wiring and Specifications Committee, Indianapolis, Ind.
28-30 EEI-AGA Taxation Accounting Committee, Sea Island, Ga.
29-30 EEI Electric Kitchen and Laundry Committee, Tutwiler Hotel, Birmingham, Ala.
29-30 CEA General Division Meeting, Mont Tremblant Lodge, Que.

FEBRUARY

2- 3 EEI Prime Movers Committee, Mayflower Hotel, Akron, Ohio.
2- 3 PUAA Region 8 Meeting, Mayo Hotel, Tulsa, Okla.
5 PIP West North Central Regional Meeting, Winona, Minn.
5- 6 PEA Hydraulic Power Committee, Hotel Roosevelt, Pittsburgh, Pa.
5- 6 PEA Joint Meeting of Electrical Equipment and Relay Committees, Roosevelt Hotel, Pittsburgh, Pa.
5- 6 Missouri Valley Electric Association Industrial and Commercial Sales Conference, President Hotel, Kansas City, Mo.
12-13 EEI Transmission and Distribution Committee Meeting, Shoreham Hotel, Washington, D. C.
12-13 PEA Transmission and Distribution Committee, William Penn Hotel, Pittsburgh, Pa.
16 EEI Industrial Relations Committee, Palmer House, Chicago, Ill.
16-17 EEI Electrical Equipment Committee, Jefferson Hotel, St. Louis, Mo.
17 Maryland Utilities Association Annual Meeting, Lord Baltimore Hotel, Baltimore, Md.
19-20 EEI-AGA Accounting Conference Planning Committee, Rochester, N. Y.
19-20 PEA Systems Operation Committee, Hotel Brunswick, Philadelphia, Pa.
23-27 CEA Engineering and Operating, Sales, and General Divisions Meeting, Palliser Hotel, Calgary, Alta.
27-28 Controllers Institute of America, Southern Conference, Shamrock Hotel, Houston, Texas.

MARCH

2- 6 ASCE National Convention, Hotel Fairmont, San Francisco, Calif.
5- 6 Pacific Coast Electric Association Engineering and Operating Section Conference, Long Beach, Calif.
8-11 NCEA Electrical Industries Meet, Hotel Nicollet, Minneapolis, Minn.
12-13 PUAA Region 5 Meeting, Richmond, Va.
19 EEI Industrial Relations Committee, EEI Headquarters, New York, N. Y.
23-24 NCEA Accounting Conference, Dyckman Hotel, Minneapolis, Minn.
23-24 Southeastern Electric Exchange 20th Annual Conference, Boca Raton Hotel, Boca Raton, Fla.
23-25 IES Canadian Regional Conference, Chateau Laurier, Ottawa, Ont.

1953

26-27 Oklahoma Utilities Association Convention, Tulsa Hotel, Tulsa, Okla.
30-Apr. 2 EEI 19th Annual Sales Conference, Edgewater Beach Hotel, Chicago, Ill.

APRIL

8- 9 Pacific Coast Electric Association Administrative Services Section Conference, Phoenix, Ariz.
8-10 Northwest Electric Light and Power Association, Engineering and Operation Section, Multnomah Hotel, Portland, Ore.
8-10 Missouri Valley Electric Association Engineering Conference, President Hotel, Kansas City, Mo.
12-14 IES Southwestern Regional Meeting, Hotel Baker, Dallas, Texas.
16 EEI Industrial Relations Committee, in conjunction with Personnel Section of Ohio Electric Institute, Netherlands Plaza Hotel, Cincinnati, Ohio
16-17 Southeastern Electric Exchange Engineering and Operating Section Conference, Edgewater Gulf Hotel, Edgewater Park, Miss.
20-22 National Conference of Electric and Gas Utility Accountants, Sherman Hotel, Chicago, Ill.
21 NCEA Accident Prevention Committee, Dyckman Hotel, Minneapolis, Minn.
21-23 Oklahoma Utilities Association, Southwestern Gas Measurement Short Course, University of Oklahoma, Norman, Okla.
22 NCEA Distribution and Equipment Engineering Meeting, Dyckman Hotel, Minneapolis, Minn.
23-24 PEA Meter Committee, Hagerstown, Md.
23-24 IES Pacific Northwest Regional Conference, Multonomah Hotel, Portland, Ore.
24-25 North Central Electric Association, South Dakota All-Electrical Industry Meeting, Ward Hotel, Aberdeen, S. Dak.
26-28 Rocky Mountain Electrical League Annual Spring Conference, Shirley Savoy Hotel, Denver, Colo.

MAY

1- 2 Controllers Institute of America, Pacific Coast Conference, Hotel Ambassador, Los Angeles, Calif.
3- 6 EEI Purchasing and Stores Committee Annual Meeting, Hotel Statler, Detroit, Mich.
4- 5 EEI Accident Prevention Committee, Edgewater Beach Hotel, Chicago, Ill.
4- 6 Northwestern Electric Light and Power Association, Business Development Section, Davenport Hotel, Spokane, Wash.
5- 6 EEI Transmission and Distribution Committee, Edgewater Beach Hotel, Chicago, Ill.
7- 8 PEA Industrial Sales Conference, Galen Hall, Wernersville, Pa.
7- 8 PUAA Annual Convention, Chase Hotel, St. Louis, Mo.
11-12 EEI Electrical Equipment Committee, Sir Walter Hotel, Raleigh, N. C.
12-13 PEA Electrical Equipment Committee, Edison Building of Philadelphia Electric Co., Philadelphia, Pa.
13-15 Pacific Coast Electric Association Annual Convention, Hoberg's, Lake County, Calif.
14-15 IES East Central Regional Conference, Hotel Lord Baltimore, Baltimore, Md.
14-15 PEA Hydraulic Power Committee, York, Pa.
14-15 PEA Transmission and Distribution Committee, Skytop, Pa.
18-19 IES Southern Regional Conference, Sedgefield Inn, Greensboro, N. C.
25-26 IES Great Lakes Regional Conference, Syracuse Hotel, Syracuse, N. Y.
25-27 EEI Meter and Service Committee, Wentworth-by-the-Sea, Portsmouth, N. H.

JUNE

1- 3 EEI 21st ANNUAL CONVENTION, ATLANTIC CITY, N. J.

The EDISON ELECTRIC INSTITUTE
BULLETIN

The Electric Industry in 1952

B. L. England
President, Edison Electric Institute

A SIGNIFICANT development of 1952 in the power industry was the organization of the Ohio Valley Electric Corp. by 15 power companies of that region to build two steam plants with a combined capacity of 2.2 million kw to supply power to the Federal government's Atomic Energy Commission. This organization follows the pattern established two years earlier by the five-company Electric Energy, Inc., which is installing 900,000 kw in southern Illinois near Paducah, Ky., also to supply power to the Federal government.

A similar pattern of cooperative action in a major undertaking is the proposal of five New York State power companies to carry out, if Congress grants permission, the redevelopment of Niagara Falls, the site of one of the great historical hydroelectric developments of America, made also by private enterprise.

Development by Private Capital

These examples nullify the claim often made that private capital is unable or unwilling to undertake large-scale power developments and that the Federal government must, therefore, build such projects. Private capital has again demonstrated its willingness and ability to develop large power resources in the public interest. The private enterprise method avoids the needless expenditure of hundreds of millions of dollars taken from the taxpayer. It creates new tax resources, assures careful plans that satisfy the wishes of local governments, careful estimates, frugal construction and operating costs, and rates approved by local regulatory authority.

Another development of long-range importance to the power industry has been the study of the technical and economic problems of the conversion of atomic energy into electric power by five groups of companies under agreement with the Atomic Energy Commission. Among the companies entering into these agreements are the Union Electric Co. of Missouri, The Detroit Edison Co., the Commonwealth Edison Co. and Public Service Co. of Northern Illinois, the Pacific Gas and Electric Co., and the Pioneer Service and Engineering Co. of Chicago. By arrangement, engineers from several other power companies are participating in the studies under these agreements.

The withholding by Congress of appropriations for many unnecessary duplicating transmission lines and other power facilities proposed by government bureaus was another significant industry development of 1952.

An adequate supply of power was available in all sections of the United States throughout the year 1952, with two exceptions. In the Pacific Northwest drought was experienced in the latter part of the year. The Bonneville Power Administration of the Federal government in that region operates under a "calculated risk" policy whereby it contracts to sell power to large industries beyond the firm generating capacity of its hydroelectric plants in dry years, a policy which contemplates the risk of periodic power shortages. In the Tennessee Valley area, drought also resulted in some interruption of power supply to those industrial customers holding interruptible power contracts.

The gross margin between generating capability and peak power demand in 1952 for the country as a whole was the same as it was a year ago, about 12 per cent. Shortage of critical materials, aggravated by the steel strike in mid-summer, held back the construction program of the power industry and is expected to continue to affect adversely construction progress in 1953 and 1954. Schedules which called for an addition of 9,000,000 kw of generating capacity in 1952 experienced a slippage of nearly 3,000,000 kw, almost one-third. The actual addition of new capacity was a little over 6,000,000 kw. The causes of delay, however, held back about equally the operations of power consumers so that the anticipated growth of power demand fell short of expectations, leaving the margin between total generating capability and total peak demand unchanged from the year before.

The growth in December peak demand for 1952 was about 7 per cent compared with a growth of 9 per cent in 1951, and in 1950, following the outbreak of the Korean War, an increase of 14 per cent over the previous year.

Installed Generating Capability

Total installed generating capability at the end of 1952 was approximately 84,500,000 kw. The margin between peak demand and generating capability was about 9,000,000 kw.

The construction program for the entire power industry for 1953 calls for the addition of 12,000,000 kw. Delays in construction schedules are expected to continue, however, because of the effect which shortages of critical materials have already had and will continue to have on the manufacture and installation of heavy power equipment.

The investor-owned companies have scheduled the installation of about 9,000,000 of the 12,000,000 kw scheduled for installation in 1953.

Construction expenditures of the investor-owned power companies in

1952 totaled $2,500,000,000. The budgeted expenditures in 1952 were $2,650,000,000. The construction budget of the companies for 1953 is $2,850,000,000.

To finance 1952's building program, the electric companies during the year drew on such internal sources as depreciation reserves and surplus accruals for $800,000,000, and sold securities totaling some $1,700,000,000. Making up the securities total were $1,100,000,000 in long-term debt, $400,000,000 in common stock, and $200,000,000 in preferred stock.

Total construction expenditures from the end of World War II to the end of 1952 amount approximately to $13,000,000,000, a figure greater than the total investment of the power companies in electric plant and equipment of $12,500,000,000 at the close of 1945.

Electricity generation by the industry increased 27,000,000,000 kwh over 1951 to attain a record of about 400,000,000,000 kwh. With the addition of some 63,000,000,000 kwh generated by industrial and railway plants for their own use, total U. S. electricity production in 1952 was about 463,000,000,000 kwh — four times Russia's estimated generation.

Over 1,500,000 new customers came on electric lines during 1952, bringing the total to about 48,500,000. This increase represents an expected leveling-off from the phenomenal rate of growth, averaging better than 2,000,000 customers a year, experienced since World War II. Because electricity now reaches nearly every American, with more than 97 per cent of all occupied urban and rural homes being served, future customer additions will largely reflect the formation of new households.

Electricity use continued its accelerating advance in the home during 1952, with the average annual consumption per residential customer rising to 2175 kwh, the second straight year in which the average use increased by more than 170 kwh. Average revenue per residential kwh reached a new low of 2.76 cents.

A number of factors have made it possible to continue to supply electricity as one of the few bargains left in our inflation-ridden economy. Technical and operational improvements, the installation of efficient new plants, and constant management efforts to seek out new ways of providing better, more economical service, as well as progressive gains in power use, have been instrumental in keeping the necessity for rate increases at a minimum.

Inflation has, however, been more than a match for the advances that have been made, and this fact seems to have been recognized by the regulatory commissions who have shown a growing appreciation of the necessity of insuring the financial strength required to provide adequate electric service. From 1946, through the first 11 months of 1952, according to Edison Electric Institute tabulations, there have been a total of 348 applications for rate increases, involving 174 companies. Of the 348 applications, 308 have been granted, 26 are pending, seven were withdrawn, and seven denied. By itself, the 1952 record shows 77 actions by the commissions: 60 applications were granted, 15 are pending, two were denied.

Helping to lessen the heavy impact of sharply increased cost is the reduction in coal required to produce a kwh of electricity. Coal consumption per kwh generated in 1952 amounted to 1.1 lb, 3.9 per cent lower than in 1951, representing a saving of some 6,000,000 tons of coal during the year, which at 1952's average cost of $6.10 a ton, is $36,000,000. In 1940, coal for electric company plants cost $3.40 a ton, and 1.34 lb were needed per kwh. The most efficient plant now produces power about three-fourths of a pound per kwhr, and plants now designed will lower that figure to about two-thirds of a pound.

Electricity sales for the industry have nearly doubled in the past six years, attaining a new high of 343,000,000,000 kwh in 1952. Despite the dislocating effect of the steel strike on the nation's industrial power users, who account for half of annual kwh consumption, total sales were 7.8 per cent over the 1951 record, with industrial sales 6.1 per cent higher than in 1951, sales to commercial customers 8.5 per cent greater, and sales to residential users 13 per cent more.

Total revenues of the investor-owned electric companies reached $5,400,000,000 in 1952, increasing 8.8 per cent over the record in 1951.

Expenses continued to grow during 1952, with taxes of all kinds still composing the leading item. The 1952 tax bill for electric companies was $1,240,000,000 on electric operations only, 7.8 per cent higher than in 1951. With the addition of gas departments in companies providing both services, the total tax take was nearly $1,400,000,000.

The Federal government received $775,000,000 of the total electric taxes, with $465,000,000 going to state and local governments. Some 23 cents of each dollar received by the companies as electric revenues were paid over to government in the form of taxes.

Wages and salaries, the second largest expense item, totaled almost $1,100,000,000 for 1952, an increase of 7 per cent over 1951. The fuel bill was over $900,000,000, a rise of 5 per cent.

Last Call!

FEBRUARY 2, 1953, IS THE DEADLINE
for entries in the
Hughes, McCall, Westinghouse, More Power to America, and Matthews Valor Awards

FEBRUARY 16, 1953, IS THE DEADLINE
for entries in the
Martin, Watts, and Planned Lighting Awards

The time remaining for electric companies and their personnel to gain recognition for outstanding achievement by entering the fields of competition covered by the EEI Prize Awards is fast running out.

Please remember that the contest rules have been liberalized to invite wider participation . . . that competition has been increased by the addition of a new award . . . that entries for the above awards must be postmarked or received at the Institute not later than the dates indicated.

EDISON ELECTRIC INSTITUTE
420 Lexington Ave. New York 17, N. Y.

The Socialist Super-Power Program

C. B. Boulet

Director of Personnel, Wisconsin Public Service Corporation

An address before the Sixth Round-Table Conference of the EEI Industrial Relations Committee, St. Louis, Mo., November 17, 1952

DURING the past few years, electric company executives have recognized the government super-power program for what it actually is, i.e., an opening wedge through which socialistic ideologies can be realized here in the United States. Through advertising and publicity programs, electric companies have told the public the facts. For this they have been sharply criticized, chastised, and vilified, not only by lesser proponents of these schemes but by none other than President Truman himself.

Electric companies have been charged with carrying on a program designed to inspire fear in the hearts and minds of the people, and the President and members of his cabinet have been loud in their statements that the super-power program is not in any sense socialistic.

It would seem appropriate, therefore, to examine the background and beginnings of the government power program in the United States. Where did the idea behind it find birth? Who were the men who originally planned the program? Where did the legislation which inaugurated the program originate? From whence has the planning and the drive for the execution of the program come?

I believe I can present sufficient facts which will prove beyond a question of a doubt that:

1. The government electric power program is socialistic and was inspired by the Socialist Party.
2. Stated objectives of flood control and navigation used by proponents of government power are fraudulent and used only to sell the socialistic power scheme.
3. The plan of government operation of the electric power industry was the first step in the overall plan for socialization of the nation's entire economy and destruction of the profit system in this country.
4. The force behind the program over the years was furnished by men who are avowed socialists.
5. Virtually every phase and step in the program has been in keeping with the original socialistic concept and plan.

In order to prove these statements I will not ask for acceptance of my own personal opinions nor statements of those of my associates in the power business who have opposed these efforts to foist socialism on the American people. I will use statements made by leaders of the Socialist Party and others in letters and speeches, in the socialist platform and in socialist newspapers, covering the points that I intend to make. It will take space to present these documentations, but the case must stand or fall on them, and for that reason I deem it not only desirable but necessary to give these proofs.

The nucleus of the idea of using government ownership of power as the pivotal point for the socialization of all industry is found in the words of Nikolai Lenin, a disciple of Karl Marx. Marx, back in 1867, published his book, *Das Kapital*, the essence of which was that the only way the worker could get ahead was to have the government own all industry.

Power Plants and Politics

Nikolai Lenin, who was the Father of the Russian Revolution, was an ardent and devoted disciple of Marx. When Lenin succeeded in overthrowing the Kerensky government during closing days of World War I, he started at once to set up a socialistic state which has since become the Union of Soviet Socialist Republics. Lenin's idea of the value of power plants as a political instrument to be used in controlling the economy is expressed in a letter to a political friend, in which he said:

"Couldn't you produce a plan or a political scheme which would be well understood by the proletariat? For instance, in ten years we should build 20 (or 30 or 50) power stations covering the country with a network of such stations each with a radius of 400 versts or 200 if we are unable to achieve more. We need such a plan at once." (Please note that Lenin spoke quite honestly of "a political scheme.")

It may be wondered just how this socialist in far-off Russia had anything to do with the original idea of government control of the electric industry in this country. Therefore, let us see if we can detect any similarity between the words of the Russian socialist and the following:

"We cannot hope to take over the whole power industry successfully even if it were thought advisable to do so at a moment's notice." And read this continuation of the quote: "But a scattered series of great generating plants selling their power within a radius of 300 miles might be expected to have a considerable effect upon the extension of public ownership to the transmission lines and the whole industry."

Who made this latter statement? Lenin? No. This statement is taken from an article in the *New Leader*, the leading socialist newspaper published in New York in the 1920's. The author was one H. Stephen Raushenbush, a socialist who since that time has wielded a tremendous influence in the development of the government power program in this country. The idea of a power system owned by the government and covering the entire nation was transported to this country from the mind of Nikolai Lenin, disciple of Marx, Father of the Russian Revolution, socialist and communist, through Raushenbush, another disciple of Marx and admirer of Lenin.

And when did this program start in the United States? In 1917. Curiously, that was the same year that Lenin came to power in Moscow, the same year that he proposed his political power scheme in Russia. It was also during 1917 that there appeared in the socialist magazine, *The Call*, an article by a man named Carl Thompson, which discussed government ownership of power. An explanatory note relating to the article and

referring to the Public Ownership League, of which Thompson was then Secretary, said:

"Its (the Public Ownership League's) general object is the public ownership of public utilities and natural resources. Many noted and prominent members of the Socialist Party including two members of the present executive committee of the Party are members of the League."

Thompson, in this article, let the cat out of the bag when he wrote:

"Successful ownership of power production means an adequate control of transportation and of industrial forces depending upon electric power for their successful operation." Note the similarity between the statements of Lenin, Raushenbush, and Thompson. They are all of the same school.

Thompson was a member of the Socialist Party, being on the national committee of that Party as early as 1905 and having his name placed in nomination for the President of the United States at the Socialist Party convention in 1908. He, too, as a socialist and secretary of the Public Ownership League, was a moving force behind the drive to get the government of the United States into the power business.

Socialist Party Platforms

The foregoing statements might be sufficient to identify the government power program in this country as socialistic, but I want to make sure that we nail denials of this fact for what they are—either statements of the uninformed or deliberate lies. So let us take a look at the platform of the Socialist Party in those years when the government power idea was no more than a gleam in its parent's eye.

The Socialist Party platforms in 1920, 1924, 1928, and 1932 each carried a plank sponsoring government ownership of electric companies. I quote from the 1924 platform because it was about at this time that the first bill covering a super-power system to be owned and operated by the government was introduced in Congress. The plank read as follows:

"We propose a publicly (government) owned giant power system under which the Federal Government shall cooperate with states and municipalities in the distribution of electric energy to the people."

A similar statement appeared in the 1928 platform. The 1932 platform of the Socialist Party advocated "public (government) ownership of mines, forests, oil, and power resources; public utilities dealing with light and power, transportation and communication, and all other basic industries."

On the basis of this documentary evidence, it is clear that the conception of the public power idea was in the minds of the leaders of the Socialist Party and came to birth in the platform and planning of that party during those years when these men hoped to convert the American people to the whole philosophy of Karl Marx.

In this effort the Socialist Party failed. The men who promoted the Marxian theory of government dominating the people, however, realizing that there was no chance of the Party gaining power, changed their technique and worked to inject their socialistic plans into the national economy through the use of senators and representatives who were sympathetic to socialist plans but who were members of other parties.

Unless it can be shown that this statement is factual, the claim that TVA and its successors were socialist-inspired falls of its own weight. Unless it can be established that there was a direct relationship between the socialistic planning and the actions of certain senators and representatives, there would be no basis for claiming that the Senate and House bills which finally culminated in the establishment of TVA and permitted the beginnings of the development of a giant super-power system were socialistic.

Inability to Elect Legislators

It is an admitted fact that at no time did the Socialist Party command sufficient strength through its membership to elect senators and representatives. The American people wanted no part of this foreign concept of government, nor would they accept any scheme bearing the socialist label.

The methods used by the Socialist Party to get its ideas and ideals adopted can again be best explained through the statements of its leaders and reports of meetings held by these leaders. It can also be established by similar documentary evidence that the program for government power planned by them succeeded.

When it became apparent to the bright young men who were the brains of the Socialist Party that there was no chance for a hoped-for revolution in this country, they suggested various new methods through which they could gradually carry out their ideas of a super government which would control absolutely the life of the people.

Influencing Government Officials

The first step suggested by the schemers involved persuading men who were in government but who were not tagged with the Red label to carry out the socialist plans. Move number one in this effort was the establishment of cordial relationships with certain senators and representatives in Washington. Here again, I don't want my word to be taken for these statements. Let us examine the following quotations. Here is one from Carl Thompson's magazine, *Public Ownership*, the issue of December, 1923:

"A conference is being called by the Public Ownership League of America (controlled by socialists) and its affiliated organizations (the Socialist Party).

"The League is launching a movement for nation-wide public hydro-electric and super power. . . .

"The purpose of the conference is:

"1. *To focus the attention of the members of Congress and government officials upon this great public question and emphasize its tremendous importance.*

"2. To arrange for the preparation and publication of briefs, bulletins, public documents containing the facts and information on this subject so that they may be available to all public officials and the public at large."

And here is the balance of the quotation from the December, 1923, issue of *Public Ownership*. The article states that the purpose of the Washington meeting was *"To draft suitable measures for introduction in Congress, providing for the national public super-power system . . .,"* and continues:

"United States Senator, George W. Norris, of Nebraska, has agreed to introduce suitable measures providing for the public super-power system. . . ."

Note that here is direct evidence of the tie-in between the socialists'

super-power scheme and Senator Norris. This conference was held in Washington, January 16 and 17, 1924, at the Hotel Hamilton. But here again, unless some action was actually taken, it would be possible for those who deny the socialistic aspects of this power program to insist that the relationship ceased at this point.

However, following this conference there was a report carried in the February, 1924, issue of *Public Ownership*. Here it is:

"The public super-power conference held in Washington, D. C., January 16 and 17, was a notable and encouraging success. It accomplished its object and marked another step forward in the public ownership movement in America.

"Among the immediate results of the conference are the following:

"1. *A bill was drawn and prepared for introduction in Congress at an early date providing for a nation-wide publicly owned super-power system....*

"2. *Arrangements were made for the bill to be introduced in the Senate by United States Senator George W. Norris, and in the House by Congressman Oscar E. Keller of Minnesota....*"

The question, then, is was any action actually taken by the Senator? The facts are as follows:

This bill, written by the socialists (S-2790) and providing for a nation-wide government-owned power system, was introduced in the Senate by Senator Norris in the 68th Congress on March 10, 1924. To deny that this bill was of socialistic origin is to admit ignorance of the facts or utter disregard for the truth.

The bill included plans for the first TVA and also provided for the following:

1. A nation-wide public super-power system.
2. Federal aid to states, cities, counties, districts, and other political subdivisions in the development of public super-power systems at costs.
3. A bond issue of $500,000,000 by the Federal government to provide a revolving fund for the initial financing of the system.
4. The manufacture and distribution of nitrate and fertilizers manufactured in connection with the public power system.

This bill was the wedge with which the Socialist Party intended to open the way for the United States government to construct, own, and operate not only a super-power system but coal mines, oil wells and refineries, gas and other fuel resources, railroads, etc. It was the first step in the socialistic program to put the Federal government in charge of virtually all key industries of the country.

It is an interesting fact that in this first bill, which incidentally was defeated, there was scarcely mention of flood control and navigation. Representatives in Congress recognized the bill as socialist-inspired and defeated it when it was presented.

The second effort to get the government into the power business came two years later in 1926. This bill (S-2147) was again introduced by Senator Norris but limited the authority of the Federal government to build and operate power plants in the Tennessee Valley only. Here again there was no emphasis on flood control or navigation, the entire objective of the bill being power development and ownership by the Federal government. The bill was also defeated, as was a similar bill (S.J. Res. 163) introduced in 1927.

Socialist Background of TVA Bill

The language of all of these bills was virtually identical, and the language of the final TVA bill passed in 1933 corresponds so closely to that of the original bill written by the socialists that there can be no doubt that the original draft of the super-power bill carried through to the final bill. Remember that the idea originated in the Public Ownership League in 1923. The league was controlled by the Socialist Party, and its officers and directors were socialists. The socialist plan was and still is for the government to take over the entire electric light and power business and finally all key industries.

By 1933 the proponents of this bill and those who were working behind the scenes realized that it would be virtually impossible to get it passed unless it was tied in tightly with flood control, navigation, etc. It was too evident that it was socialist-inspired. So the language of the bill was changed to emphasize flood control and navigation, and the bill was finally passed.

A further indication of just how far the Socialist Party went to establish contacts through which its philosophy could be injected into the national economy is given by a report in the June, 1933, issue of *Public Ownership*. This report covers contacts made by the former director of information of the Socialist Party. It reads:

"With a virtual revolution under way at the Capitol of the nation and a general confusion and lack of knowledge as to just what is going on, we felt that it was vitally important to get down to Washington and to get in touch with members of the Senate and the House and especially those who are members of our Public Ownership League.

"We did not find it so difficult to make an appointment with and meet President Roosevelt. . . ." Following some incidental conversation with the President, the report goes on: "The President then asked about certain appointments for the Tennessee River Authority, which is to have charge of the Muscle Shoals project—one of which he has since made."

In the same issue of the magazine other contacts are reported, as follows: "United States Senator Dill was most helpful to us in acquainting us with the pending measures and proposals now in Congress. United States Senator Lynn J. Frazier of North Dakota was also very helpful.

"Congressman Lemke has introduced a bill, HR 3834, for the establishment of a government owned and operated banking system. A conference with Senator George W. Norris of Nebraska showed him as alert and active as ever in promoting public projects. Of course, the Senator feels naturally elated over the final adoption of his measure for the development of Muscle Shoals. . . ."

How anyone can be so naive as to believe that the origin of the government operation of the power industry idea was nonsocialistic is hard to understand. The evidence is convincing. There is an old saying that a rose by any other name is just as sweet. And I say that socialism by any other name smells just as foul.

I could continue to cite quotation after quotation supporting the fact that the super-power movement of government belongs to the socialists and confirming the technique used by the Socialist Party to get United States senators and representatives

and even the President of the United States to do what the socialists were unable to do for themselves. I think, however, I have given sufficient information so that there can be no doubt as to these facts.

The second technique used by the socialists in their effort to change the free-enterprise system to the system prevalent in Europe and based on the theories of Karl Marx is indicated by the writings and speeches of the planners and directors of the Socialist Party. Bear in mind that these statements came at the time when the leaders of the Socialist Party realized that there was no chance for a revolution in this country.

Emphasis on Encroaching Control

In 1927, when the super-power bills were being pushed, H. Stephen Raushenbush, whom I mentioned earlier, wrote several articles for the *New Leader*, the official organ for the Socialist Party in New York. He recommended certain steps to promote socialism in this country. Rather than digest what he was trying to accomplish, I will let him tell you in his own words. The following quotation comes from the March 5 issue of the *New Leader*:

"The old-time carrying drive of socialist doctrine was in poverty and prophetic promise. These no longer hold us. . . . Between cataclysmic socialism and encroaching control, the latter will be the only one acceptable to this nation for a long while.

"Here the idea is rather to present a reasonable program of encroaching control. Marx has convinced his thousands, but the Ontario Hydroelectric Commission has convinced its tens of thousands. We need more leverage places like the latter."

Just how did Raushenbush propose to go ahead on this idea of encroaching control? His thought was that some of the young socialists should get into the Federal government where they could bore from within. Referring to these young men, he wrote in the *New Leader*:

"They can be of enormous use to the (socialist) movement as government officials, starting in small and definitely working on the hope that in the course of another ten years *we shall see government control of a much more definite kind over our trusts, banks and general industries;* that there will be government corporations operating and managing not only the Port of New York and Muscle Shoals, but many other developments.

"There is a chance here for young men not only to keep the liberal groups (socialists) informed about the dirty work that is going on and times and ways to prevent it, but also to look forward to careers of usefulness in executive positions, *making the government control over industry more adequate, pioneering in a field of essential importance.*" He went on to say in this article:

"Government officials in the bureaus and departments in Washington are of great importance. The problem of government officials is a major problem of immediate socialism. One good man with his eyes, ears and wits about him, inside the department—whether it be the Interior or the Treasury—can do more to perfect the technique of control over industry than a hundred men outside."

Raushenbush wasn't talking just to hear himself talk. He followed his own advice. In 1933 he secured a job with the government and got into the very department he mentioned—the Department of the Interior. It wasn't long before he was in the exact spot he had been seeking. He became an executive when he became Chief of the Research and Planning Section of the Power Division and continued with the department until January, 1947. Here was a man who had said in 1929:

"The long-time aim of the liberal and radical groups is the abolition of the profit system for private use.

"Within the next ten years (from 1929) we are going to have a chance such as we have not had for the last forty."

Raushenbush was an opportunist. He saw what was coming and did his best to promote the socialistic schemes that he had advocated. Is it any wonder that the pressure for government ownership of the electric industry has mounted during these years? Is it any wonder that the Department of the Interior under Harold L. Ickes and Oscar Chapman has been the foremost exponent of these schemes?

Raushenbush wasn't the only socialist to take the advice to get into the government to bore from within. There were many others. Back onto the scene come Carl Thompson, member of the National Committee of the Socialist Party, head of the Information Bureau, and at one time placed in nomination by the Party for President.

Just after the TVA bill became law, the socialists succeeded in writing into the Public Works Act, depression-inspired, provisions for giving cities a free gift of 30 per cent, later raised to 45 per cent, of the cost of building municipally owned electric plants.

The Secretary of the Interior, Harold Ickes, appointed Thompson to a special three-man Board of Power Review to look over the applications of municipal plants and get them approved.

The job of this man Thompson, therefore, who had been promoting government ownership and other socialistic ideas was to give away government money—tax money—to promote the very cause he had espoused while a leader of the Socialist Party.

Thompson showed up again in 1938, when he managed to get on the payroll of the Bonneville Power Administration. Again his job was to promote government ownership of electric light and power companies, and he was paid well to do it.

Now I ask, is this program socialistic? Was it planned by the socialists? Was it pushed by the socialists? Was it carried out with socialist help? There can be no answer to these questions except in the affirmative. The evidence is so overwhelming that there can be absolutely no question as to its validity.

Democratic Party Policies

Before I close I want to give one more quotation in order to tie in the present policies and actions of the Democratic Party with the schemes that have developed over the past 25 years. I quote from a letter written by President Truman to Senator Russell:

"I've had in mind a Northeast power pool, a Southeast power pool, which is almost completed; a Southwest power pool and, of course, we have a great one in the Northwest and one developing in the middle of the country, so that eventually we will have a power network."

There is no question that here is the master plan proposed by the Socialist Party back in the 1920's. It is true that Mr. Truman has now changed the name of these "authorities" to that of "pools." Could it be

New Salesmen's Handbook on Electrical Equipment for Commercial Establishments

Application of Electrical Equipment in Commercial Establishments, a handbook designed to help the commercial salesman make "on-the-spot" recommendations and estimates in preliminary form, has been made available by the Institute.

Prepared by the EEI Market Development and Electrical Applications Committee, the handbook consists of six sections containing basic data on the following subjects: classifications of business, commercial air conditioning, commercial ventilation, commercial water heating, commercial cooking, and commercial lighting.

Specifically designed as a handy reference for the man in the field, the handbook is printed on standard 6¾ x 3¾ loose-leaf sheets for insertion in a pocket-size binder.

Single copies of the publication are available from the Edison Electric Institute, 420 Lexington Avenue, New York 17, N. Y., at a price of $1.00 per copy for EEI members and $2.50 per copy for nonmembers. Lower quantity prices apply on larger orders.

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that he doesn't like the socialist-coined term "authorities?" The record shows that the socialists originally used this term "authorities" to designate the power developments they had in mind. In fact, the first such "pools" in this country were called "authorities": the Tennessee Valley Authority, Columbia Valley Authority, proposed Arkansas Valley Authority (proposed by Congressman Ellis), and the Missouri Valley Authority.

Raushenbush wrote in the *New Leader* of March, 1927: "The workers are more apt to support a power authority than complete nationalization at once of the power industry." The term "authority" again appears in the first super-power bill drawn by the socialists and sponsored by Senator Norris.

I do not want to give the impression that this drive for a socialist economy and the destruction of the free-enterprise system and this government of the people has been expended only in the growth of government super-power.

Socialist Party Aims Realized

The platform of the Socialist Party in 1932 called for the following:

1. A compulsory system of unemployment compensation.
2. Old age pensions paid by the government.
3. Health and maternity insurance.
4. Steeply increased inheritance taxes.
5. Greatly increased income taxes on the higher incomes of individuals and on corporations.
6. Creation of a Federal Marketing Agency for the purchase and marketing of agricultural products.
7. Subsidies to farmers.
8. Control of credit and banking.

The plan of a socialistic state was more recently exemplified in the Spence Bill (HR 2756) presented to the 81st Congress. This bill called for full control of virtually all industries and resources by the Federal government. Fortunately it was defeated.

The same theme is found again in a report prepared last year by the President's Water Resources Committee. This report proposed establishment of 15 river basin commissions, each commission to be charged with the development, utilization and conservation of water resources, including related uses of land, comprehending but not limited to conservation of water situations. It also provided for "control of floods, improvement of navigation, reclamation of lands, development, generation, transmission, and disposal of electric power, control of pollution and other matters." Adoption of this plan would, without question, bring about the socialization of the entire economy and would sound the death knell of all private electric companies within a short period of time.

The Marxian idea of the state over all is still being fostered by a powerful group in this country which will use every means within its control—propaganda, attacks on the free-enterprise system, subversion of education in the schools, attacks on electric companies, and legislation—to accomplish its objectives.

It is small wonder that dyed-in-the-wool socialists look at the record of legislation since 1932 and the present trends and chuckle to themselves because the record shows that virtually every objective for which they were working has been reached. Those which have not become law are at present being presented to each session of Congress and find support among the self-styled liberals.

Norman Thomas, who has been the socialist's candidate for President seven times since 1924, emphasized this trend in the October, 1952, issue of *American Magazine* in an article entitled, "I Am Glad I Am Not Running This Time." He pointed out that the largest vote the socialists received was in 1932, but that after Roosevelt's New Deal got going, the supporters of the Socialist Party decreased. The reason is obvious.

And still we hear the chorus from self-seeking politicians who would take this nation to the end of the socialist road, "Don't worry, my friends, this isn't socialism."

We have reached the point from which the view of the trend over the past 20 years and the situation we now face is crystal clear. We are living in the crucial day in which it is not enough to hold the line, to simply contain the outcroppings of Marxian philosophy.

Reverse the Trend

There must be a reversal of the trend. There must be a turning away from these dangerous doctrines which hold that people are no more than serfs and slaves of the government, and that government is all-powerful, absolute, and possesses a super-intelligence through which it decides what the people want, what they get, what they can do, and what is forbidden.

We must turn back to the concept held by the founders of this government that man is not the subject of the state but that the state must be subject to its citizens. We must get back to the concept that recognizes the sanctity and God-given rights of the individual. This we must do, or this nation conceived in liberty will, just as sure as the sun rises tomorrow, perish.

I am proud to be associated with an industry that has been and still is in the forefront of the effort to stop—yes, to reverse—the trends which have brought us to this grave crisis. I hope its courageous leaders will not falter in discharging what is, in truth, a moral responsibility and patriotic duty.

Japan Adopts EEI Power Survey Method as Aid in Solving Electricity Crisis

F. Douglas Campbell
The Detroit Edison Company

As a basic aid to the solution of the electricity shortages in Japan, which have been cutting into the industrial productivity of this vital Far Eastern bastion of the free world, the Japanese government recently decided to adopt the Edison Electric Institute's semi-annual survey technique for reporting on national power requirements and progress in electricity supply.

Although Japanese manufacturers have the capacity to produce relatively large quantities of heavy electric power equipment, expansion of Japan's power systems to meet rapid postwar load increases has been handicapped by lack of finances. So, with a definite need to make the power situation widely known and clearly understood, the Japanese government has put into operation a survey similar to that of the Institute.

The decision came as an outgrowth of discussions held with Japan's financial advisor, Joseph M. Dodge, President of The Detroit Bank, now President-elect Eisenhower's budget representative in Washington, and with Walker L. Cisler, President of The Detroit Edison Co. and Chairman of EEI's Electric Power Survey Committee.

Believing that on-the-spot assistance was required in setting up the survey procedure, the Japanese government asked EEI to recommend two engineers to make the trip to Tokyo. F. Douglas Campbell of Detroit Edison and Leroy L. Hinckley of Pacific Gas and Electric Co., both members of EEI's survey committee, were selected.

As invited guests of the Japanese government, the two Americans worked closely with representatives of Japan's electric power systems and equipment manufacturers, as well as with government officials. All concerned showed great interest in the effort and gave wholehearted cooperation.

About 80 per cent of Japan's electric generation comes from hydro plants, most of which are of the run-of-the-river type subject to frequent and wide variations in stream flow with corresponding effects on electric output. Steam-electric stations provide the balance of electricity production but are handicapped by a limited supply of domestic coal, which is high in cost and poor in quality.

Japan ranks sixth among the world's electric power producers. During 1951, the nation's generating sources, including utility plants, industries and railways, put out nearly 48,000,000,000 kwh, a total which breaks down to a per capita average of about 570 kwh.

Electric utility plants in 1951 had about 9,000,000 kw of capacity, with industrial and railway installations bringing the national total to almost 11,000,000 kw.

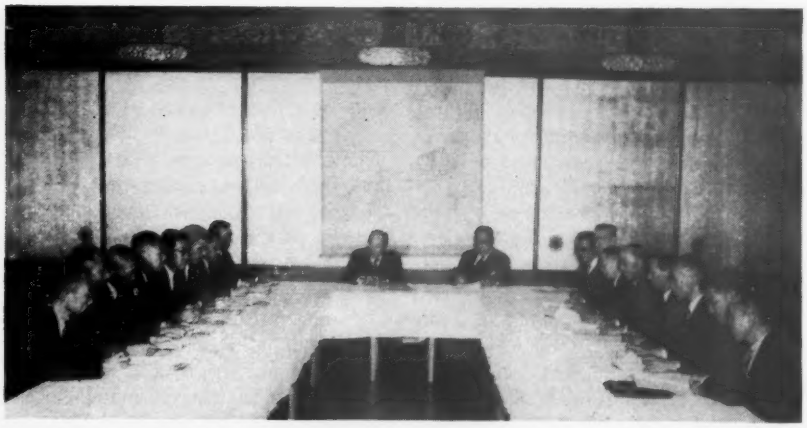
Japan's electric operations during 1951 were marked by the completion of extensive industry reorganization. In May of that year, Hassoden, the single nationwide generation-transmission agency, and its nine distribution affiliates were dissolved, and the power supply responsibility was assumed by nine privately owned electric companies.

Still remaining, however, are the problems stemming from insufficient plant expansion. Although Japan's electric industry has increased its power production since 1945 by more than half, the installation of new generating facilities has not kept pace with increases in demand. As a result, power is short and must be rationed. Rates are restrictive in order to discourage the use of energy.

The Japanese are well aware of the seriousness of their power situation and of the need for improvement if a self-sustaining economy is to be realized. The new semi-annual power survey is an important step towards solving the power crisis and will provide data as of April 1 and October 1 each year.

Work on the survey started last September, and the first semi-annual report, with results as of October 1, 1952, has been issued. Like the EEI reports, it presents estimates of annual peak loads, peak capabilities, and energy requirements for the current year and some years ahead. The capabilities given are based upon new power projects definitely scheduled at the time of the survey.

(*Continued on page* 28)



Yasuke Anzo, The Tokyo Electric Power Co., Inc., and Taizo Ishizaka, The Tokyo Shibaura Electric Co., Ltd., (seated left to right at head of table) preside as Chairman and Vice Chairman, respectively, of Japan's newly formed Survey Committee.

Problems of Power Supply for Three-Phase Packaged Air-Conditioner Units

B. M. Gallaher

Senior Engineer, Texas Electric Service Company

A paper presented before a meeting of the EEI Transmission and Distribution Committee, Dallas, Texas, October 23-24, 1952

AS air conditioning fulfills one of the prime quests of mankind, namely comfort, it appears pertinent to consider some of the problems involved in supplying central station power to this load.

Few people, both within and without the industry, realize the magnitude of the electric load in the Southwest which is susceptible to weather and changes in temperature. This correlation of weather and load was brought home to Texas Electric Service Co. this summer when a cool day, following a series of hot days, dropped the total load on this system approximately 25 per cent. All doubt was removed as this change in load repeated itself after a second cool front passed across the company's service area.

In order to determine if the portion of the system load susceptible to weather changes was increasing, percentage-wise, a look was taken at loads for the past few years. Fig. 1 represents the results as found for a certain district. Obviously, this load is a composite picture of ventilation, water coolers, water pumping, as well as air conditioning, all of which, to some degree, are affected by the outside temperature.

The "packaged" air conditioner with hermetically sealed motor which has been developed and placed on the market during the past five or six years has received the acceptance of the public as demonstrated by expanding sales. The "packaged" unit, so-called because the various components of compressor, motor, evaporator, fan, etc., are factory-assembled, has rapidly gained favor because of simplicity of installation and comparatively low cost. Apparently, the use of hermetically sealed units has followed the concept and favorable experience of the fractional horsepower refrigerator units. Concurrent with the development of the packaged units has been the development and use of the hermetically sealed motor and compressor unit, both three-phase and single-phase.

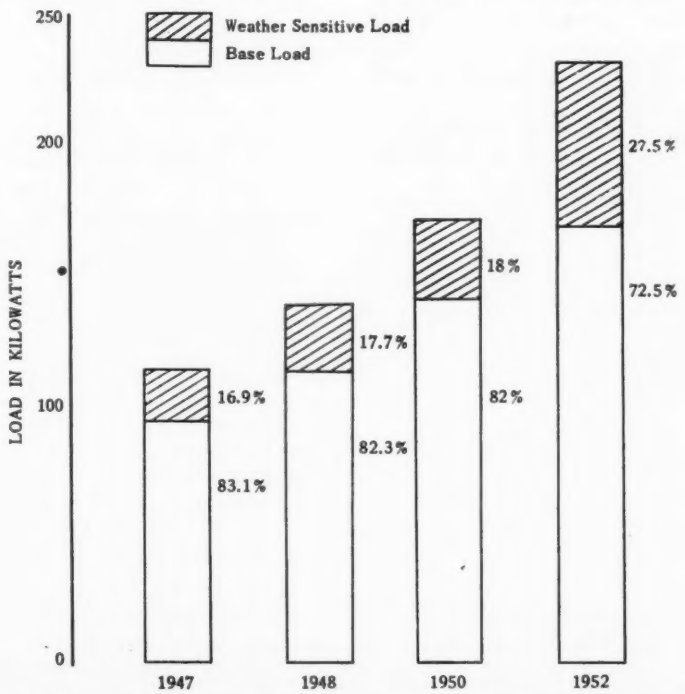


Fig. 1--Relationship Between Load After a Series of Hot Days Followed by a Cool Day

However, in the three-phase units there are certain electrical operating features which set these units apart from their single-phase counter-part in household refrigerators. The following appear to be typical values:

	Three-Phase Packaged Air Conditioners	*Single-Phase Household Refrigerators*
Voltage	220	115*
Locked Rotor Current	350–400%	500%
Operating Voltage Range	90–110%	110–125 v
Starting Voltage	.....	78½%

* The nameplate rating of at least one make of household refrigerator is "110 to 125 volts."

It is the intent and purpose of this paper to discuss briefly the experience of Texas Electric Service concerning some of the problems viewed by an electric company which is promoting this rapidly growing load. Obviously, opinions will unavoidably be injected into this discussion. The basic common concern of any electric company, manufacturer, and distributor, however, is the desire that Mrs. John Doe need only to "push the button" for results.

The air-conditioning manufacturers have raised certain questions pertaining to the electrical end of the three-phase packaged unit, and it appears that these questions and problems of power supply may be summarized into three major headings:

1. Voltage design and operating range.
2. Unbalance voltage.
3. Protection.

Problems of Supply

There are many factors in the distribution system which influence the voltage at the utilization equipment.

1. *Voltage Level*

The voltage level or "nominal voltage" is the contractural voltage at which the electric company agrees to supply the customer at his point of service. Certainly there will be variations of the delivered voltage, both plus and minus, from the "nominal voltage," which are met in practice.

a. The "design spread" of a given system supplied from a regulated source, for example, may consist of the following allocated permissible per cent voltage drops:

	Peak Feeder Load— Per Cent	*Light Feeder Load— Per Cent*
Primary	5.0	1.3
Transformer (150 Per Cent Load)	3.0	0.6
Secondary	3.0	0.0
Services	0.5	0.1
	11.5	2.0

Per cent drops which are common to all parts of the feeder and which may be compensated for by automatic regulators are:

	Per Cent
Transformer (50 Per Cent Loaded)	1.0
Services	0.5
	1.5

Total Design Spread (Per Cent):
$11.5 - 2.0 - 1.5 = 8$

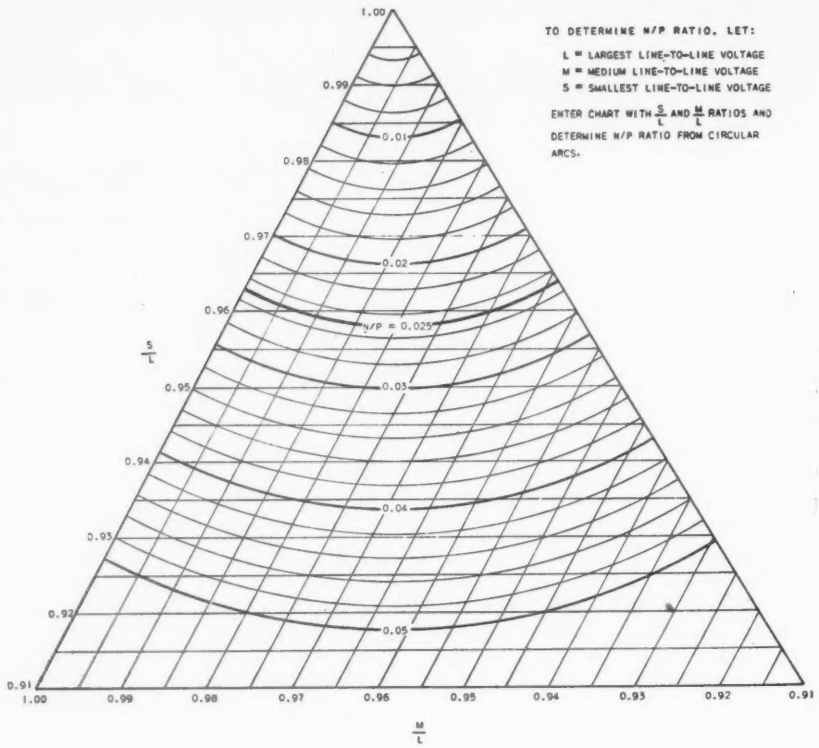


Fig. 2—Chart for Determination of Unbalance Factor

This "design spread" of 8 per cent corresponds to plus or minus 4 per cent of nominal voltage (120/240) or a design spread between the first and last customer of 8 per cent, resulting in 115/230 v on the last customer on the circuit and 125/250 v on the first customer nearest the regulated source who might be served from a lightly loaded transformer. The large majority of the customers receive voltages which lie between these extremes.

b. Whereas the above spreads are considered the normal design spreads, they may be slightly exceeded in practice prior to correction should deferment of remedial measures be indicated. This additional spread is generally taken both on the upper and lower voltage ends of the design spread, with resulting voltage range from 113/226 v to 127/254 v.

2. *Voltage Unbalance*

The polyphase induction motor is inherently a voltage balancing device. As is well-known, once running, an induction motor will continue to run with only single-phase voltage applied within certain reduced limitations of load capability and torque. This example of "single-phasing" might represent an extreme of unbalanced voltage.

The unbalanced voltages in a three-wire system may be resolved into two balanced three-phase systems, one having positive rotation and the other having negative rotation. As a measure of unbalance, it is strongly recommended that the ratio of negative to positive phase sequence voltages

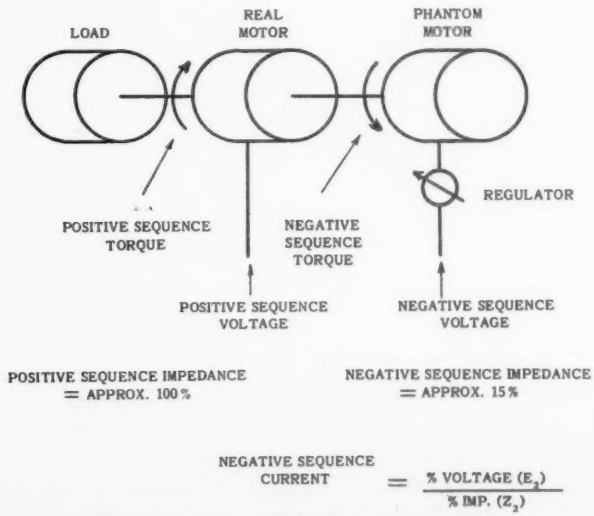


Fig. 3—Motor Unbalanced Voltage Analogy

TABLE I

Line Voltages	Positive Sequence Voltage	Negative Sequence Voltage
A 1, 1, 1	1.	....
B 1, 1, .95	.981	.033
C 1, 1, .90	.961	.064
D 1, 1, .85	.944	.099

TABLE II

	A	B	C	D
Line Voltages Table I				
Positive Sequence Current	1.0	1.02	1.04	1.06
Negative Sequence Current	.0	.249	.48	.74
Core Loss	.20	.192	.185	.178
Friction and Windage	.15	.150	.150	.150
Primary Copper Loss	.30	.312	.324	.338
Secondary Copper Loss	.20	.208	.216	.225
Stray Load Loss	.15	.156	.162	.169
Primary Negative Sequence Cu. Loss	.....	.019	.069	.165
Secondary Negative Sequence Cu. Loss	.....	.012	.046	.110

(commonly referred to as the "N/P ratio") be seriously considered for adoption by the industry. This N/P ratio is both mathematically sound and may be readily determined. A chart[1] has been developed, Fig. 2, to simplify the determination of the N/P ratio when the phase-to-phase voltages with the motor running are known. The effects of unbalanced voltage may be more readily visualized in an analogy illustrated in Fig. 3. The "real" motor is driven by a balanced (positive phase sequence) voltage, and the "phantom" motor, on the same shaft, is supplied by a small balanced (negative sequence) voltage with opposite rotation to that of the "real" motor.

The effect of this small voltage on the "phantom" motor is identical to "plugging."[2] In a motor of the squirrel-cage type, 100 per cent voltage during "plugging" will produce about 750 per cent current, from which it is apparent that only a small negative sequence voltage is required to produce in the winding considerable current in excess of that which occurs under balanced conditions. As the negative torque in the "phantom" motor is proportional to the square of the negative sequence voltage, it is apparent that as the negative phase sequence voltage increases its torque increases at a greater rate.

The net results of unbalanced voltage are to increase the motor losses, slightly lower the speed, increase the temperature rise of the windings, and lower the break-down torque.

TABLE III

Voltages	Currents Line 1	Line 2	Line 3
A	1	1	1
B	1.22	1.09	.793
C	1.44	1.21	.616
D	1.70	1.38	.46

The values furnished by one manufacturer, in Tables I, II, and III, are given as typical and are indicative of what may be expected.

Table IV shows the results of certain tests recently made locally on a 5-ton three-phase packaged unit. The applied voltage was controlled with the use of single-phase regulators to give unbalance as desired. It is to be noted that balanced voltages up to 268 v, or 122 per cent of nameplate rating, were applied without exceeding the protective overload heater rating of 21.7 amp. Fig. 4 illustrates the relation between current in the high phase and average voltage for various degrees of unbalance.

A number of voltage complaints pertaining to unbalance were received this summer. These were analyzed as to the degree of unbalance before the complaints occurred, and Fig. 5 illustrates our findings on this limited number of samples. As may be seen, there was only a small group which fell below 2 per cent, indicating that unbalance in the order of 2 per cent may be tolerated safely with this equipment. It may be emphasized that these complaints originated through air conditioning service men and that the complaints may have been based principally on high or low voltage rather than unbalanced voltage.

There are several sources of unbalanced voltages on a distribution system. As the predominant loads are single-phase, the system has to some extent been designed for them.

Four-wire delta transformer-secondaries have been used extensively to serve combined power and lighting loads. This system within certain load limitations has been generally

TABLE IV—TESTS ON THREE-PHASE 5-TON AIR CONDITIONER—DATA ON COMPRESSOR MOTOR ONLY

Test No.	Average Phase to Phase Voltage		N/P	Current in High Phase		Power
	Volts	Per Cent	Per Cent	Amperes	Per Cent	Kilowatts
11	216	98	0.0	15.8	99	4.78
1A	219.5	99.7	0.0	16	101	4.93
1	220	100	0.0	16	101	4.87
20	230	105	0.0	15.7	99	4.83
4	239.5	109	0.0	16.4	103	5.09
4A	240	109	0.0	16.5	104	5.09
6	240	109	0.0	16.3	102	5.05
17	254.5	116	0.0	16.7	105	4.95
15	268.5	122	0.0	18.4	116	5.12
9	251	114	0.5	16.6	104	4.97
2	221	100.5	1.15	16.75	105	4.94
3	223.2	101.5	1.95	17.6	111	4.97
5	241	109.5	2.05	18.0	113	5.01
19	255	116	2.4	19.0	120	5.0
16	261	119	2.8	20.7	130	5.05
10	250	114	2.82	20.0	126	4.98
21	231.5	105	3.0	18.9	119	4.86
7	241	109.5	3.1	18.7	118	5.12
18	253	115	3.5	20.2	127	5.01
14	251	114	4.22	21.0	132	5.0
8	241	109.5	4.85	20.4	128	5.20
13	236	107	4.9	19.8	125	5.09
12	228.5	104	4.95	20.0	126	5.0

$$N/P = \frac{\text{Negative Sequence Voltage}}{\text{Positive Sequence Voltage}} \times 100 \text{ per cent}$$

[1] "Problems of Serving Lighting and Three-Phase Motor Loads from a Delta Secondary," A. S. Anderson, Ebasco Services Inc., Fifth Power Distribution Conference, University of Texas.

[2] "Plugging" is the term generally applied to the practice of suddenly reversing the phase rotation of the voltages applied to a running motor without allowing the motor to stop rotating for the purpose of "braking" or quickly reversing the direction of the motor.

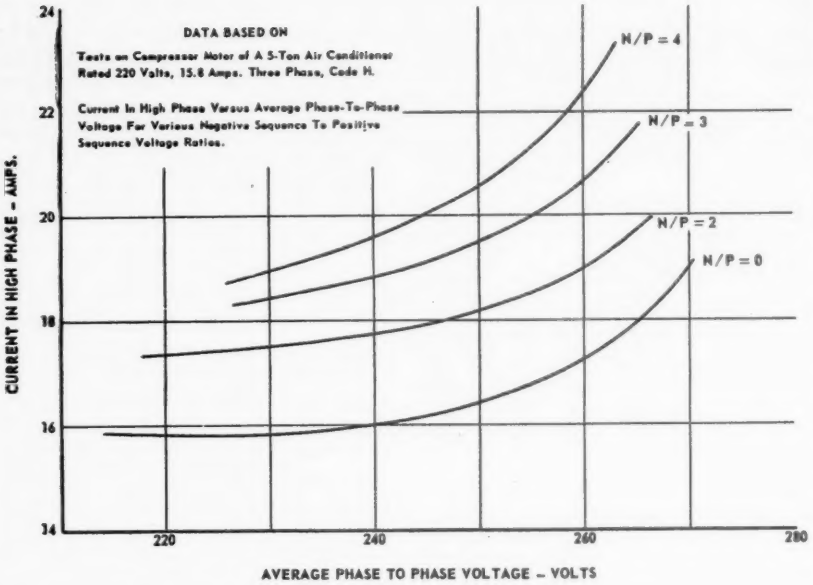


Fig. 4—Data Based on Tests of a 5-Ton Air-Conditioner Compressor Motor

favored over four-wire wye 120/208-y in serving residential districts and small commercial loads where an open-wire radial distribution system is used.

The advantages of the four-wire 120/240-v secondary system include:

1. Economy: metering costs are lower; transformer costs are lower in smaller banks.
2. Operation: facilitates supplying new three-phase load from existing single-phase secondary system. (Single-phase loads of 120/240-v and metering do not have to be disturbed.)

However, the four-wire delta system cannot generally deliver 100 per cent balanced three-phase voltage, although the inherent unbalance of this system is well within controllable limits. In order to keep the unbalance in voltage and voltage drops within acceptable limits, it is necessary that the per cent impedance of the transformer-secondary and service be kept within certain maximum values for a given combination of single-phase and three-phase loads.

The rigorous calculation of voltage unbalance on a four-wire delta supplying voltage to a three-phase motor is a very difficult and arduous task. This is further complicated by the fact that the running motor becomes a balancing device, and the solution of the problem is further involved by the assumptions of single-phase and three-phase components of loads together with their power factors.

A comparison of several of the various factors which might cause unbalanced voltages is shown in Table V. It will be noted that primary unbalance-to-neutral, together with open-wye open-delta banks, may be one of the worst offenders. Also, the simple and rather obvious mistake of operating transformers with dissimilar ratio (different taps) produces the worst combination conducive to unbalance.

Because of the large economic advantage of serving scattered three-phase loads with open-wye open-delta banks, the necessity for maintaining a more balanced primary becomes imperative. This effort in balancing has led several Southwestern electric companies to record and map transformers with respect to each phase.

The possibility that transformers may have their taps set on different ratio should not be overlooked. Many times trouble men have adjusted taps to achieve a more balanced secondary voltage during some hot afternoon when the customer's motor was tripping "off." Later balancing of primaries did not automatically correct the tap settings.

3. *Protection*

Protection of equipment is a mutual problem and concern of both manufacturer and electric company. To a customer who has a rather large investment in a piece of equipment it is very difficult to explain how and why his motor failed last night during the storm, and, unfortunately, failures have occurred many times in the Southwest without favoritism to any particular system.

Of the known cases of trouble resulting in motor burn-outs which

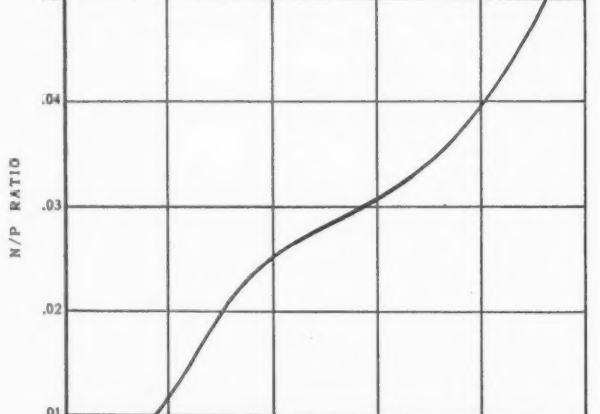


Fig. 5—Relation of N/P Ratio to Customer Complaints

TABLE V—PRINCIPAL CAUSES OF UNBALANCED VOLTAGE

Cause	Approximate Magnitude of Voltage Unbalance—High to Low Phase—Per Cent	Net Effect on Secondary System		
		Wye 120/208*	Delta 120/240§ Open	Delta 120/240§ Closed
1. Primary unbalance due to phase-to-neutral unbalanced load	2–10†	Small	Large	Small
2. Primary unbalance due to phase-to-phase unbalanced load	1–3‡	Medium	Large	Medium
3. Taps on transformers on different ratio	2½–13	Medium	Large	Small
4. Dissimilar transformer impedances	1–2	Small	Medium	Small
5. High ratio of single-phase load to three-phase load on transformer secondary	1–5	Negligible	Small	Medium

* Delta-wye bank; however, the wye-wye bank will give comparable phase-to-phase balance. Phase-to-neutral voltages on wye-wye may be badly unbalanced.
† Primary voltage—phase-to-neutral.
‡ Primary voltage—phase-to-phase.
§ Wye-delta or open-wye open-delta.

might be alleviated with more adequate appliance protection, the more prevalent are:

1. Single-phasing.
2. Unbalanced voltage and current with the high current occasionally falling in the unprotected phase.
3. Overload due to high refrigerating loads or mechanical trouble within the machine.

Single-phasing has always been a problem on an electric utility system. With the increased use of higher distribution voltages, single circuits serving 5000 to 7000 kva of load together with the associated increase in line exposure are not uncommon. These large feeders necessitate the use of single-phase sectionalizing fuses on residential primaries to permit the greater part of the circuit to remain energized following a disabling fault on a branch; and this practice is based on the philosophy and premise that each utilization appliance is self-protecting. This primary sectionalizing is just one more in a chain of fuses in the utility's system and the customers' distribution.

Because of the low ratio of locked rotor current for hermetically sealed three-phase motors to the locked rotor current of conventional motors (Code F and H), the overload elements may have only slightly over 100 per cent of the heater rating[3] under stalled single-phase conditions. Perhaps, one improvement would be to use the starting relay of the compressor motor as a voltage relay looking at two phases (L-1 and L-3), with the starting relay of the cooling tower motor looking at two other phases (L-2 and L-3. (The heaters are assumed to be on L-1 and L-3.) With these two relays interconnected, low voltage or loss of voltage on either phase might then be recognized and the entire air conditioning system be shut down. This problem offers a real challenge to the manufacturers of controls.

Unbalanced currents are sometimes aggravated by the good intentions of some willing soul who, upon finding that current is higher in one phase, will "roll" the phases in order to get high current in the unprotected phase. One solution might be adequate overload protection in each phase.

"Overload" in the sense of load produced by the driven load is a combination of many factors, among which is the design of loads commensurate with actual field conditions. Experience and measurements have indicated that many installations have been overloaded with the failures or trip-outs usually occurring during severe ambient conditions.

Summary

In summary it appears that the consensus of distribution engineers in the Southwest with regard to this problem might be restated somewhat as follows:

1. Voltage levels from 214 to 254 v at the utilization point will be found in practice on a nominal 120/240-v system without warranting correction.
2. Voltage unbalance beyond tolerable limits due to unbalanced primaries must be corrected. Attention and correction of this condition is being emphasized. From both an economical and engineering standpoint, the present practice of open-wye open-delta banks together with four-wire delta secondaries is considered sound.
3. Trouble resulting in burn-outs has been experienced due to single-phasing.
4. No radical change in distribution practice or design is indicated for this type of load.

[3] Which may be as high as 140 per cent of nameplate as permitted by the National Electrical Code.

New PIP Activity Outlined for 1953

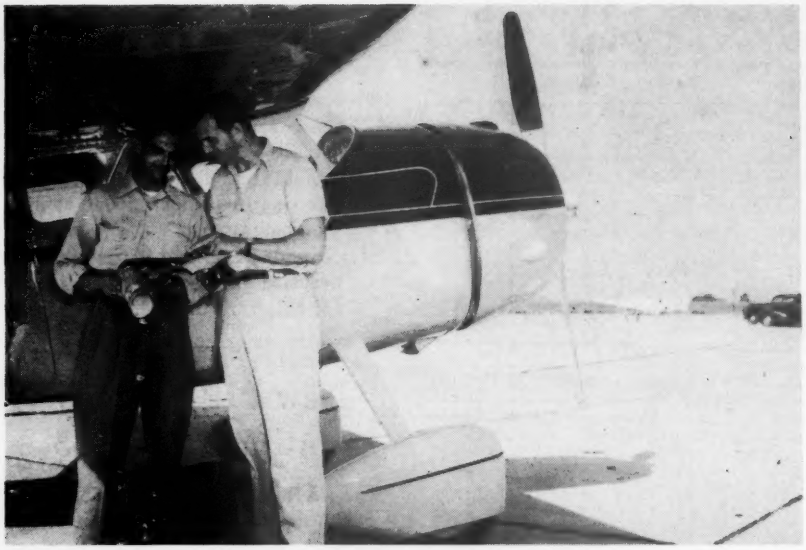
A PLAN for a 1953 celebration calling attention to the high standard of living in the American home attained through the use of electricity has been announced by the Electric Companies Public Information Program.

To be known as "Electricity for Better Living," the celebration includes plans for electric-company service-area promotions, which will be coordinated with a national program consisting of advertising tie-ins on the Better Living theme, a Better Living TV series, and a series of radio broadcasts over 350 independent stations. In addition, several dramatic shows on Better Living will be given over the major networks.

In preparation for the observance, an outline containing suggestions for speeches, billboards, window displays, community activities, radio and television scripts, posters, and other material has been distributed to business-managed electric companies.

According to the outline, " 'Electricity for Better Living' is not to be interpreted as a sales promotion program" but is intended to increase public understanding of the benefits and conveniences that have been brought about by private initiative, planning, imagination, and community development.

The activity will point out that electricity is the one item in the home that has resisted the inflationary trend of the last ten years. The housekeeper's dollar in 1951 bought 42 cents worth of food, based upon the 1939 dollar, and 50 cents worth of clothing but purchased $1.40 worth of electricity for the home. The average home uses about 2000 kwh a year now, and electrical officials predict this will be doubled by 1960.

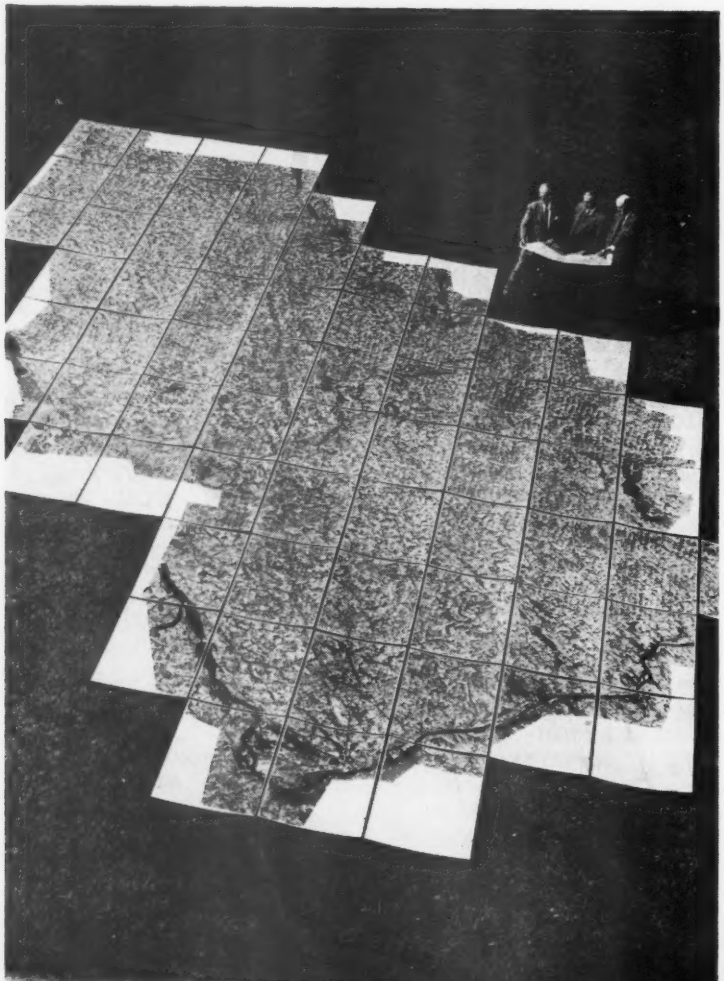


A pilot and photographer confer before taking off on one of the 26 flights made to obtain pictures for an aerial photo-map of Philadelphia Electric's territory, from which plastic drawings of selected areas, at varying scales, are being reproduced.

Aerial photographs, of which 806 were taken, are corrected for scale differences and related to ground positions.

Dozens of photos are assembled to form the 66 mosaics, measuring 32 by 54 in., which constitute the completed aerial survey map shown at right.

Important features are traced from the mosaics by means of special pens mounted on carriages.



Lettering is set in type, printed on clear plastic, and positioned on the tracings. Finished tracings are then photographed and printed on plastic sheets to secure master work maps for further reproduction.

L. L. Quay, Philadelphia Electric supervisor, checks a completed work map with photo-map. Landmarks common to both maps, i.e., the river, are identifiable.

Putting Philadelphia Electric's Territory on the Map

Company Service Area Remapped by Means of Aerial Survey

TO solve the problem of maintaining complete and up-to-date maps for use in company planning and construction, the Philadelphia Electric Co. is having its four-county suburban service area remapped to specifications prepared by its own engineers in consultation with specialists in the utility mapping field.

Since the time when most of the company's maps were compiled, Philadelphia Electric's territory has undergone tremendous change as the result of increased population and industrial expansion. According to the company, its current maps are either a jumble of names and lines, where new developments have been added to existing maps, or deceptive in that new developments do not appear. An exception is the city of Philadelphia proper, which is adequately mapped and will not be included in the new survey.

The first step in the project was to make an aerial photo-map covering nearly 3000 square miles at a scale of 800 ft to an inch. The map is composed of 66 sections, each measuring 34 by 52 in., which match adjacent sections to a hairline and when placed together form a unit 33 ft high and 45 ft long.

Plastic Reproductions

Base drawings are now being made from the photo-map and reproduced on plastic sheets. These will show highways, rivers, streams, railroads, municipal, county, and state boundaries and other important topographical features. The base drawings will be the same physical size as the photo-map sections and drawn at the same scale. From these plastic drawings, reproductions can be made photographically at scales varying from 100 ft to an inch to 3000 ft to an inch. This is desirable, inasmuch as single maps of selected areas are frequently needed at different scales, depending upon their use.

The highways shown will be of the double-line type, and lettering will be done in different type faces indicating the nature of the features named in an accepted cartographic manner. For example, names of roads will be set in one type face, rivers in another, and towns and cities in still another. The lettering will be set by linotype and printed on clear plastic strips. These strips will then be placed on the original master maps and eventually become part of the ensuing plastic reproductions.

The aerial photo-map was made for Philadelphia Electric by Aero Service Corp., whose pilots made 26 line flights over the four-county area to obtain the pictures composing the map. In all, 806 photos were taken at an altitude of 10,000 ft and at a flying speed of 120 mph. The camera shutter was timed to snap a picture every 90 sec so that there would be no gaps between the areas shown on the negatives. A roll-type film, 180 ft long and 9 in. wide, was used, and approximately 200 9-in.-square exposures were made on each roll. The scale on the negatives was 2500 ft to an inch.

Reservoirs for Recreation

Thomas J. Rouner
Vice-President, New England Power Company

RECREATION is big business in New England. This fact alone is sufficient reason for the New England Electric System to be vitally interested in the subject. The promotion of recreational activities is also good business for the company. This is true not only from the standpoint of dollars spent by these people for our utility services but also because it offers us an opportunity to get better acquainted in the communities where we operate.

In contrast with most sections of the country, New England is richly endowed with salt water shorelines and fresh water lakes to provide for a balanced recreational region. A plane trip or an inspection of a road map will show the countryside studded with beautiful lakes and ponds.

But a closer look at these lakes reveals that their accessible shorelines are crowded with summer homes and camps. As a result, today, the most inaccessible areas are being sought for recreational development.

In our own sphere, New England Electric System Companies own and operate a dozen storage reservoirs scattered through Vermont, New Hampshire, and Massachusetts. Some of these reservoirs like Lake Attitash in Amesbury, Mass., or Mascoma Lake in Lebanon, N. H., have densely populated shorelines. Others in the more remote headwater regions of the Connecticut and Deerfield Rivers are used only by the more hardy fishermen and sportsmen.

These man-made reservoirs were constructed primarily for hydroelectric purposes. Thus their seasonal job is to store up flood waters during the spring freshets, thereby tending to reduce floods, and then release the impounded water during the following summer, fall, and winter, when it can be used at the power plants downstream.

These hydro plants serve a vital role in the power picture. Any interference in the flexible use of these storage reservoirs for power purposes would have a far-reaching ill effect upon New England's balanced power facilities. But long experience with reservoirs and with neighboring New Englanders has proven that these storage lakes need not be utilized exclusively for power purposes with "Keep Off" signs around the premises. The system has found that there are areas where the public can be invited to use the waters and shorelines for recreational purposes with safety and still not conflict with the primary purpose for which the reservoirs were built.

Fishing and Hunting

Company arrangements with state and Federal fish and game commissions in connection with the use of our properties for recreational purposes have resulted in very intensive use of some of these areas for fishing and hunting. For instance, the Deerfield River below Harriman Reservoir, where storage waters tend to provide a generous supply of fresh cool water, is one of the most heavily stocked fishing streams in Massachusetts. Here, New England Power Co., for a token payment of $5, has leased some 12 miles of the Deerfield River shoreline to the state for public use.

Each spring fishermen by the thousands enjoy the excellent trout fishing along this picturesque stream. Here and at the smaller Deerfield plants (Sherman and Numbers 2, 3, 4, and 5) brown, brook, speckled, and rainbow trout predominate to the fly caster's delight. Just last June a Vermont fisherman hooked a 22½ pound brown trout in the Sherman pond to establish a record for this species in the East. A great deal of this fishing on the lower Deerfield is made possible by company reservoirs and ponds.

Similarly, the First and Second Connecticut Lakes near Pittsburg, N. H., are favorite fishing grounds for those seeking land-locked salmon, square tail and lake trout. Here scores of boats put out daily from camps, enabling sportsmen to relax while matching wits with the wily game fish in these deep lakes. The lakes are owned and operated by Connecticut River Power Co. to help regulate stream flow and power generation at numerous hydroelectric plants downstream on the intensely developed and hard working river.

Although less widely known, the waters of Comerford reservoir back of the huge dam near Littleton, N. H., and St. Johnsbury, Vt., provide some of the best small-mouth bass fishing in the Northeast.

On the Deerfield at Harriman Reservoir, the Southern Federation of Sportsmen's Clubs in that part of Vermont is carrying on a program of planting several hundred thousand rainbow trout eggs and some rainbow fry, with the expectation that a natural reproduction cycle can be established. This would convert Harriman into a choice rainbow fishing area. Although the reservoir is subject to a very wide fluctuation in water surface level with a maximum range of 90 feet, there is still a sizable reservoir of deep water under low drawdown conditions.

Upstream from Harriman at the headwaters of the Deerfield, the New England Power Co. built Somerset Reservoir in 1912. The lake is surrounded by a wild forested area containing no habitation except for a few summer camps located in a very limited accessible area of the shoreline. However, the area around Somerset is widely used for deer hunting by experienced hunters. Because of the nature of the area, inexperienced hunters should avoid it, for several persons have been permanently lost in this vast wilderness over the years. At last count, there were 13 camp sites at Somerset, and 234 annual fishing permits and 56 boating permits had been issued.

In addition to these seasonal storage reservoirs, there are many excellent recreational opportunities on the more shallow ponds at the numerous hydro plants, particularly those along the Connecticut.

(Continued on page 28)

Reprinted from *Contact*, New England Electric System employee magazine.

EEI Resuscitation Awards Emphasize Importance of Intensive Safety Training

IN presenting an EEI Medal to an employee for a resuscitation described in this article, C. B. Sherman, Director of Personnel and Safety, Houston Lighting & Power Co., observed that safety is often discussed primarily from the standpoint of accident prevention. Mr. Sherman stressed, however, that any consideration of safety must also emphasize the importance of intensive training in first-aid measures to compensate for the human error in every situation.

This is amply demonstrated in EEI accident case histories involving electric shock, studies of which indicate that it is human error rather than unduly hazardous working conditions that accounts for the great majority of accidents within the industry. The employment of life-saving techniques in cases of electric shock, however, not only requires thorough training but, in many instances, extreme valor and selflessness.

Thus it was that late in 1933 the Institute established the EEI Medal to encourage the use of approved resuscitation procedures and to recognize electric company employees who successfully apply them. As the medal enters its twentieth year, a total of 351 have been authorized for presentation, 22 having been authorized in 1952.

Vesting the award with sentimental and historical value to the industry, copper from the world's first underground electric-light-and-power distribution system, laid in New York City by Thomas A. Edison, has been incorporated in the medal's composition. Current from this system was first supplied on September 4, 1882, from the Pearl Street Generating Station.

The medal is available to employees of any operating electric company in the United States, including nonmembers of the Institute, and is authorized for presentation throughout the year by the EEI Committee of Judges, composed of E. J. Kreh, Duquesne Light Co.; R. H. Coleman, Consolidated Gas Electric Light and Power Co. of Baltimore; and E. C. Rue, Boston Edison Co.

Where more than one employee performs artificial respiration in an individual case of resuscitation, the medal is awarded to the person rendering the most conspicuous service and medal miniatures to each additional employee who administered treatment. When it is not possible to determine whose performance was most effective, medal miniatures are awarded to each employee who applied resuscitation. If an employee becomes eligible for a second medal, the judges authorize presentation of a bar to be attached to the medal issued for the initial resuscitation.

To employees who render outstanding assistance other than application of artificial respiration, Certificates of Assistance, signed by the Institute President, are awarded. In addition, Certificates describing the deed for which an award is being made accompany each medal, medal miniature, and bar.

Following are brief summaries of the circumstances leading to presentation of twelve of the EEI Medals authorized in 1952. Where these summaries dramatically illustrate the courage and skill of electric company personnel, they also demonstrate the tragic results of carelessness and point up the need for closer adherence to company safety rules, if the industry's accident frequency is to be reduced.

As they become available, other statements concerning 1952 EEI resuscitation awards will appear in future issues of the BULLETIN.

MURRAY R. PLANTE

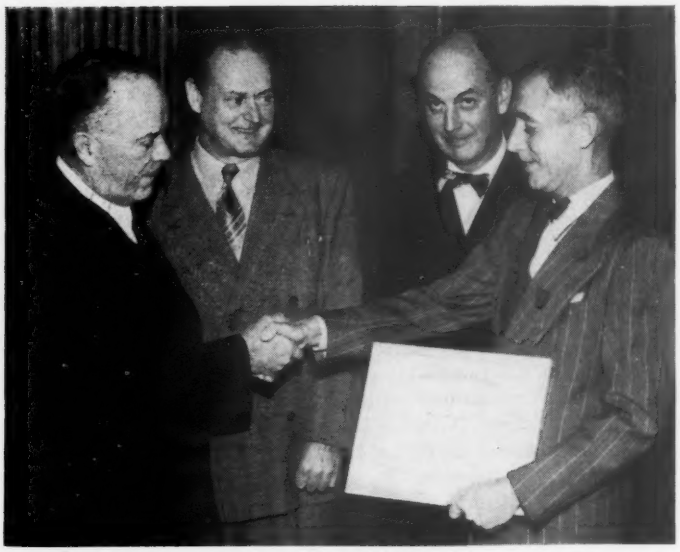
Northern States Power Company

As turbulent waters flowed through a tainter gate of the Jim Falls Dam, Jim Falls, Wis., on the morning of July 22, 1952, Intake Operator and Laborer Frank Douglas positioned himself high up on the gate and began to buff off rust and corrosion with a 110-v rotary steel-wire brush. It was hot and humid, his clothes were sticking to his body, and his hands were wet with perspiration.

He had been working for about a half hour when Maintenance Man Murray R. Plante and co-worker Joseph P. Monpas, who were ranged on either side of Douglas about 50 feet away, heard a call for help above the roar of the waters below. Douglas stiffened, and he fumbled for the switch on the buffer. Then he collapsed, and his body froze to the steel gate. Faulty insulation had energized the buffer, which was still running and was clasped in Douglas' hand.

Plante and Monpas ran to the stricken man, who was unconscious and not breathing. Plante immediately ripped the buffer's cord from its connection, thus freeing Douglas of electrical contact, and moved him to a pier adjacent to the gate. With Monpas holding

MURRAY R. PLANTE (left), Northern States Power Co., is presented an EEI Medal by G. V. Rork, President, at a meeting of the company's Men's Association.



President Walter C. Beckjord (left), CG&E, congratulates BRUCE H. POLLITT for resuscitating Clyde O. Taylor (second from left). Vice President S. M. Hamill, Jr., is standing second from right.

I. H. WEIDMAN (center), PP&L, accepts an EEI Medal Certificate from Vice President H. G. Ferguson, as Vice President G. T. Storb stands at right.

Douglas' body so that it would not roll off the pier, Plante then began to administer prone-pressure artincial respiration, which was continued for about 23 minutes before signs of life were evident. After about nve more minutes of treatment, Douglas regained his respiratory powers and was driven to the hospital by Plant Superintendent Harold D. Ermatinger.

Murray R. Plante was awarded an EEI Medal by G. V. Rork, President, Northern States Power Co., at a meeting of the company's Men's Association held in Chippewa Falls, Wis., on November 19, 1952. Frank Douglas, who lost no time from work as a result of the accident, participated in the presentation. Articles on the rescue and award appeared in the *Chippewa Herald-Telegram* of July 23, 1952, and November 20, 1952.

BRUCE H. POLLITT

The Cincinnati Gas & Electric Company

On the morning of June 17, 1952, in Cincinnati, Ohio, Associate Test Engineer Clyde O. Taylor and Test Electrician Bruce H. Pollitt were testing an induction voltage regulator in the Electric Repair Shop of The Cincinnati Gas & Electric Co. The equipment involved had not been adequately covered with protective rubber, and Taylor came in contact with the test circuit, which had been energized at 2400 v. He was rendered unconscious and remained in contact with the circuit until Assistant Shop Foreman John I. Droege knocked him loose by means of a flying block.

Taylor had stopped breathing, and Pollitt immediately began to apply prone-pressure artificial respiration, which was administered for four minutes before signs of life were apparent. Resuscitation was continued for another four minutes until the victim could breathe without assistance.

Upon regaining consciousness, Taylor was taken to the Good Samaritan Hospital by the Life Saving Squad of the Cincinnati Fire Department for treatment of severe burns. He was away from work for about 90 days but suffered no permanent disability as a result of the accident.

Bruce H. Pollitt was presented an EEI Medal by Walter C. Beckjord, President of The Cincinnati Gas & Electric Co., on December 2, 1952, in the presence of E. S. Fields, Vice President and General Manager; S. M. Hamill, Jr., Vice President in Charge of the Electric Department; Fred R. Rauch, Vice President and Director of Industrial Relations; Sidney Goldsmith, Superintendent of Operating Engineers; W. T. Holmes, Supervisor of Safety and Training; and William J. Easton, Director of Accident Prevention. Stories on the rescue and award appeared in the *Cincinnati Post* and *O-K News*, employee newspaper.

IRVIN H. WEIDMAN

Pennsylvania Power & Light Company

On July 19, 1951, Lineman Elmer Longenecker and Line Truck Driver Irvin H. Weidman were dispatched as a two-man team to repair a storm-damaged street-lighting circuit in Womelsdorf, Pa. Arriving at Fourth and Cherry Streets at about four in the afternoon, the two men discovered that a large tree limb had fallen across the street-lighting wires, lowering them to within three feet of the ground.

Longenecker, who was in charge of the job, decided to attach a pair of come-alongs to one of the lines, pull slack in it with a set of blocks, and then cut it in order to lift it from under the limb. Finding only one come-along in the truck, however, he devised another by using a ½-in. sling and proceeded to attach this to the energized line.

Suddenly Weidman heard Longenecker groan and saw that the lineman's bare right hand was in contact with the wire. Throwing a rope around his co-worker, Weidman tugged at it sharply and managed to free Longenecker. The injured man fell backward unconscious and not breathing, and Weidman immediately began to administer prone-pressure artificial respiration.

Treatment was continued for about five minutes before Longenecker showed signs of life, but after two or three more minutes of resuscitation he was able to breathe unassisted. Weidman then helped him to the porch of a nearby residence to rest briefly before being driven to a doctor. Longenecker suffered only minor burns and lost no time from work.

The victim had been wearing rubber gloves shortly before the accident occurred, and the manner in which he lost his right glove, thus exposing his bare hand to the live conductor, has not been determined.

Irvin H. Weidman received an EEI Medal at a gathering of employees held in PP&L's district office at Sinking Spring, Pa., on August 1, 1952. H. G. Ferguson, PP&L Operating Vice President, made the presentation, which was the subject of stories in the *Lancaster Intelligencer Journal* of August 2, 1952; *Lancaster New Era* of August 1, 1952; *Reading Eagle* of August 1, 1952; and a poster that appeared on all company bulletin boards.

L. L. CARROLL

Southwestern Gas and Electric Company

On a pole ten miles south of Shreveport, La., during the morning of April 7, 1952, Lineman John D. Ebarb had tied in one side of a 66-kv line to a post-type insulator, which he and Lineman C. I. Brunston had just changed, and was waiting for Brunston to complete tying in the other side with a hot stick. Brunston pulled the tie wire under the conductor and in so doing accidentally contacted the head of the hot stick with the metal base of the insulator. This grounded the conductor, and a severe arc momentarily enveloped Ebarb.

On the ground Foreman L. L. Carroll saw that Ebarb was looking up, apparently to see what had happened, but then noticed that the lineman's feet were swinging clear of the pole. At the same time, Ebarb's clothing began to burn, and Carroll ordered Brunston to rig a

L. L. CARROLL (third from left) accepts an EEI Medal Certificate from Executive Vice President N. P. Heath. C. B. O'DONNELL (left) and C. I. BRUNSTON received Certificates of Assistance, and P. E. LACOBEE (second from right) was awarded an EEI Medal Miniature. At right is Jay Alan Reid, Safety and Personnel Director.

handline to lower the injured man. Ebarb was unconscious and not breathing, and with the help of Brunston, Lineman Helper Clifton B. O'Donnell, and other crew members, he was brought to the ground within a minute after the accident occurred.

After Ebarb's smoldering clothes had been removed, Carroll began prone-pressure artificial respiration, which was continued for about four minutes before the victim showed signs of life. Ebarb began to gag, and resuscitation was then performed successively by Lineman Helper L. E. Wren and Truck Driver P. E. Lacobee for another five minutes until Ebarb was able to breathe without assistance. An ambulance arrived about 25 minutes after Ebarb had regained consciousness, and O'Donnell rode with the injured man to the hospital. Ebarb suffered severe burns and was away from work about five months.

L. L. Carroll was presented an EEI Medal and P. E. Lacobee an EEI Medal Miniature by N. P. Heath, Vice President and Louisiana Division Manager, at a company safety meeting held on November 26, 1952. At the same time C. I. Brunston and Clifton B. O'Donnell were awarded Certificates of Assistance. L. B. Wren, for whom an EEI Medal Miniature has been authorized, is no longer with Southwestern Gas and Electric and will receive his award at a future date. The presentation ceremonies received newspaper coverage on November 27, 1952, in *The Shreveport Times* and *The Shreveport Journal.*

ROBERT C. TAYLOR

Florida Power Corporation

For several days, crews of the Florida Power Corp. had been installing and regasketing three 1000-kva transformers in the company's Conway Substation near Orlando, Fla., and on January 10, 1952, were nearing completion of this work.

Shortly after lunch, Working Foreman Robert C. Taylor was returning to the substation from the Quonset hut, where the Orlando line crew has an office, when he and other crew members heard a scream accompanied by the roar of an arc. Casual Laborer John S. Haywood had entered an unauthorized work area for some unknown reason, climbed a ladder leaning against one of the transformers, and was hanging from an 8-kv transformer lead.

Taylor immediately de-energized the entire substation by opening a remote-control switch without unlocking it, yanking the handle with such force that the hasp of the lock was straightened out. When the power was killed, Haywood fell to the ground, unconscious and

ROBERT C. TAYLOR (second from left), Florida Power Corp., displays his EEI Medal. Ranged left to right on either side of Taylor are D. R. PARRISH, LAWTON BRYANT, and B. E. ROBERTSON, all of whom received EEI Medal Miniatures. J. Shirley Gracy (right), Florida Power Vice President, made the presentations.

not breathing, and Taylor immediately ran to the scene of the accident. With the help of Electrician D. R. Parrish and Groundman B. E. Robertson, Taylor positioned the injured man for prone-pressure artificial respiration and began treatment.

After about seven applications of pressure, Haywood regained consciousness, but resuscitation was continued successively by Serviceman Lawton Bryant, Robertson, and Parrish for about ten minutes until the victim could breathe without assistance. Haywood was then taken to a hospital, where he was treated for severe burns which necessitated the amputation of his left hand.

Robert C. Taylor was presented an EEI Medal and Lawton Bryant, D. R. Parrish, and B. E. Robertson EEI Medal Miniatures for their successful resuscitation of Haywood. The awards were made by J. Shirley Gracy, Vice President of Florida Power, at a special dinner held at the Villa Nova Restaurant, Winter Park, Fla., on June 5, 1952, at which time the company also presented a $500 United States Savings Bond to Taylor. Stories on the rescue and awards appeared in the *Winter Park Herald* of June 12, 1952; *Orlando Sentinel Star* of June 26, 1952; and the June, 1952 issue of *Power Lines*, Florida Power employee newspaper.

WILLIAM J. BEYER

Public Service Electric and Gas Company

Early in the morning of August 15, 1951, Foreman William J. Beyer and his Public Service Electric and Gas Co. line crew had just driven onto the New York Port Authority grounds at Port Newark, N. J., when they heard a shout, "Hi, Public Service, a man is being electrocuted!"

Hurrying to the scene of the accident, they discovered William V. Lenart, a Port Authority painter, unconscious on a steel structure, where he had somehow made contact with a 440-volt, 3-phase circuit attached to the steelwork he had been painting.

Beyer climbed up the structure to Lenart, who had slumped clear of the wires about 20 feet from the ground, and began to apply pole-top resuscitation. After about five minutes, there were indications that the victim was breathing, and with the aid of Lineman Edward H. Melchior, Line Helper Theodore J. Patz, and other members of the crew, Lenart was lowered to the ground. Shafer prone pressure was then administered by Truck Driver Frank R. Cooper, Line Helper John J. McAleavey, and Lineman Herman J. Schutze. In about 15 minutes, Lenart was able to breathe without assistance, and he was taken by ambulance to St. James Hospital for treatment of serious burns.

JACK PRENDERVILLE, Southern California Edison Co., receives an EEI Medal from C. M. Cavner, Manager of Operation.

At a special ceremony on June 12, 1952, Watson F. Tait, Jr., Vice President in Charge of Electric Operation of Public Service Electric and Gas, presented an EEI Medal to William J. Beyer. F. R. Cooper, J. J. McAleavey, and H. J. Schutze received Medal Miniatures, while E. H. Melchior and T. J. Patz were each presented Certificates of Assistance.

Heartfelt commendation was also given by the man they had saved. Expressing himself as "extremely grateful" to the line crew members, Lenart noted that there was "some risk" in the rescue, and he complimented the company for employing "such able and willing people" as well as "for the good training which was responsible for the saving of my life."

JACK PRENDERVILLE

Southern California Edison Company

At Southern California Edison's Big Creek hydroelectric station 75 miles northeast of Fresno, Calif., in the Sierra Nevada Mountains, Test Electricians Edward L. Smith and Jack Prenderville were performing a routine over-voltage test on a generator winding early in the morning of February 12, 1952. The winding was to be tested at 20,700-v and, using a hi-pot test set, Smith gradually raised the voltage to 10,000-v.

Suddenly Smith's body stiffened, and Prenderville realized that the test set had become energized. One of the set's high-tension terminals had been connected to the generator winding, but the two men had neglected to connect the other terminal to a ground. When Smith raised the voltage, the rubber heel on his right shoe broke down, and the current passed to the ground through his body.

At great personal risk, Prenderville immediately opened the switch to the low-tension winding, thus killing the set, and then broke the injured man's fall to the steel floor plate. Answering Prenderville's call for help, Electrician C. W. Halloway helped place the victim, who was unconscious and not breathing, into position for artificial respiration, while Prenderville administered prone-pressure treatment. After about five minutes of resuscitation, Smith regained consciousness and was able to breathe without assistance.

In the meantime, Operator Paul W. Barnes telephoned for a doctor; Halloway took the victim's pulse to determine the effectiveness of resuscitation; and Operator Warren H. Childers, Station

W. J. BEYER (second from right) accepts an EEI Medal Certificate from W. F. Tait, Jr., PSE&G Vice President. Other award winners were (left to right) E. H. MELCHIOR, T. J. PATZ, F. R. COOPER, J. J. MCALEAVEY, and H. J. SCHUTZE. In background are (left to right) T. Seely, Division Superintendent, A. R. Nelson, General Superintendent, and A. F. Randolph, Safety Engineer.

EEI Medal recipient J. C. McKissack (right), Houston Lighting & Power Co., and C. B. Sherman, Director of Personnel, who made the award.

Community Public Service President R. L. Bowen examines EEI Medal awarded to KIRK FORTENBERRY for resuscitating Welton Crow (second from left) with aid of E. W. TRIPP (left), who won an EEI Medal Miniature.

Chief C. L. McVey, and Subforeman Ivan S. Hallock secured blankets and heaters to keep Smith warm until the doctor's arrival. Smith was subsequently removed to a hospital for treatment of burns and lost 34 days' working time.

In speaking about the accident, Smith said:

> I was conscious of being severely shocked and tried to fall away from the test set but was unable to do so. My eyes could not focus on anything, and there was a terrible roar in my ears.
>
> All at once I had a great feeling of relief but do not know whether it was when the power went off or when I lost consciousness. However, I believe I lost consciousness after the power went off.
>
> The next conscious moment I had, I was stretched out on the floor being given artificial respiration . . . I want to express my deepest gratitude to Jack Prenderville, who had presence of mind to realize I was in trouble and who risked his own life to de-energize the circuit, which cleared me from the burn . . .

Jack Prenderville was presented an EEI Medal and C. W. Halloway, Warren H. Childers, C. L. McVey, Ivan S. Hallock, and Paul W. Barnes Certificates of Assistance at a meeting of employees in the Edison Clubhouse at Big Creek on August 8, 1952. The presentations, made by C. M. Cavner, Manager of Operation, received newspaper coverage and were the subject of a story appearing in the October, 1952, edition of *Edison News*, employee magazine.

JAMES CLIFTON McKISSACK

Houston Lighting & Power Company

Early in the afternoon of October 29, 1951, a foreman of the Houston Lighting & Power Co. was opening and closing a main switch to enable his crew to locate a ground on a 3-phase 440-v circuit in the electrical shop of the company's Greens Bayou Power Plant. Electrician W. D. Seamans had previously pulled the fuses which supposedly protected all of the equipment in the shop and was presently engaged in insulating a joint of the 440-v conductor.

Suddenly Electricians James Clifton McKissack and Joe W. Wilson, who were working about 25 feet away from Seamans, heard him yell, "Cut it off," and then repeat the phrase weakly. Unknown to anyone, the 440-v circuit was connected ahead of the fuses which had been pulled. When the main switch was closed, the conductor on which Seamans was working became energized, and he was frozen to the line.

McKissack and Wilson ran to the injured man and managed to free him of electrical contact by tugging at the cuff of his overalls. Seamans was unconscious and not breathing, and McKissack immediately administered prone-pressure artificial respiration. Treatment was begun less than one minute after the accident occurred, and within two or three minutes the patient showed signs of life. He began to gasp irregularly, and McKissack timed his strokes to the victim's breathing until it became normal within another two or three minutes. Seamans was then placed on a stretcher and taken to the first aid station, where he was treated for minor burns on the left hand. He lost no time from work because of the accident.

On April 18, 1952, James Clifton McKissack was presented the EEI Medal for successful resuscitation in a ceremony at the Greens Bayou Power Plant witnessed by all the workers at the plant and attended by Vice President P. H. Robinson; Superintendent of Power W. A. McDonald; Safety Supervisors C. A. Koch, H. H. Howze, R. P. Waring, and H. E. Hughes; and Assistant Construction Manager L. W. Donnelly, Ebasco Services Inc. C. B. Sherman, Director of Personnel and Safety, made the award.

KIRK FORTENBERRY

Community Public Service Company

A new 2.4-kv circuit had been strung and energized on a transformer pole in Texas City, Tex., on the afternoon of April 11, 1952, and Line Foreman Kirk Fortenberry of Community Public Service Co. was supervising First Class Lineman Charles Hicks and Apprentice Lineman Welton Crow as they prepared to phase in the new circuit with the one already on the pole.

Lineman Hicks, wearing his rubber gloves, had climbed above the transformers, when Crow stepped on the transformer hanger crossarms and with his bare left hand grabbed the middle phase wire, energized a few minutes before, to pull himself into position.

Hearing the contact and Fortenberry's shout from below, Hicks immediately reached over and loosened Crow's grip on the wire. Unconscious and not breathing, the victim fell about 20 feet to the ground, where Fortenberry at once began prone-pressure artificial respiration, while Lineman E. W. Tripp radioed from the truck for a doctor and an ambulance.

After about five minutes, Crow began to show signs of breathing, but artificial respiration was continued for 15 minutes more by Fortenberry. Tripp and Hicks relieved him, giving respiration for about ten minutes longer, and Crow was breathing without assistance when the doctor and ambulance arrived. Crow was treated for burns on his left hand and right thigh, as well as for injuries suffered in his fall, and it was three weeks before he could return to work.

At a dinner in Galveston's Hotel Buccaneer on October 25, 1952, R. L. Bowen, President of Community Public Service, presented an Edison Electric Institute Medal to Kirk Fortenberry. Medal Miniatures were awarded to E. W. Tripp and to Charles Hicks, who was unable to attend the ceremony. Welton Crow was on hand to pin the medals on his rescuers. News articles and pictures covering the presentation were carried on October 30, 1952, by the *Alvin Citizen*, *Angleton Times*, *Texas City Sun*, *La Marque News*, and on November 6, 1952, by *The Mainland Times*.

CHARLES E. SHELLEY

The Detroit Edison Company

After replacing a number of street lights in Saline, Mich., on July 24, 1951,

CHARLES E. SHELLEY (right), The Detroit Edison Co., accepts an EEI Medal Certificate from J. W. Drummond, General Superintendent, as Safety Director R. P. Douglas watches.

Vice President V. C. Brennan, Union Electric Co. of Missouri, pins an EEI Medal on GEORGE MUELLER. At left is WILLIAM BESTE, who received an EEI Medal Miniature for assisting Mueller in the successful resuscitation of Henry Puchta (right) last June.

Lineman Harry de Wolfe and "B" Foreman John Wilson noted that the lights were unusually bright and, together with General Foreman Charles E. Shelley, drove in a ladder truck to the transformer pole in search of the cause.

The cover of the transformer was removed and a handline rigged to facilitate the removal of oil. DeWolfe and Wilson, who were on the pole, then noticed that a nut was missing from the balance arm of the coil and decided to move the handline so that the balances could be raised and the nut replaced.

Before taking the handline farther up the pole, DeWolfe reached across to the contractor, where his rubber gloves were lying, and in so doing swung his left shoulder into the nearest open cutout. Receiving a 2800-v shock, he was rendered unconscious and slumped into his safety belt free of electrical contact.

By means of a double handline and with the assistance of Shelley on the ground, Wilson lowered DeWoife, who was not breathing. Shelley immediately began to administer prone-pressure artificial respiration. which was continued for about 15 minutes before the victim showed signs of life. Treatment was then continued for another 10 to 15 minutes until normal breathing was restored, at which time DeWolfe was removed to a hospital in an ambulance which had been summoned. The injured man received only minor burns and was able to return to work within two days.

For the successful resuscitation of his co-worker, Charles E. Shelley was presented an EEI Medal by J. W. Drummond, General Superintendent of Detroit Edison's Overhead Lines Department, in a ceremony held on June 6, 1952.

GEORGE MUELLER

Union Electric Company of Missouri

Crew Leader Henry E. Puchta was standing on the lower arm of a pole in front of the Pacific, Mo., ice plant on the morning of June 25, 1952, with the two members of his Union Electric Company of Missouri line crew removing capacitors below him, when he inadvertently lifted his head and contacted a 2.4 kv line. He slumped in his belt, unconscious and not breathing.

Lineman George Mueller, who was underneath the injured man on the pole, immediately came to Puchta's aid and began to administer pole-top resuscitation, while Truck Driver William Beste went to the ice plant to summon medical help. When Beste returned, he assisted Mueller in lowering the victim on a handline. On the ground, artificial respiration was continued by both Mueller and Beste. They were still working on Puchta when a doctor arrived on the scene and administered a stimulant. After a total of some 15 minutes of resuscitation, Puchta was breathing normally.

He was then moved to the anteroom of the ice plant until an ambulance arrived to take him to the hospital, where he was treated for burns. Puchta was able to return to work in ten days.

At a luncheon ceremony on October 1, 1952, Vice President V. C. Brennan of Union Electric presented George Mueller with an Edison Electric Institute Medal and awarded a Medal Miniature to William Beste. Henry Puchta, who also participated in the presentation, had previously commended his rescuers in a letter to Paul Hodson, Union Electric Safety Supervisor, "for their splendid work rendered to me in reviving my body after coming in contact with a live wire." He also noted that he would be "ever indebted to them and others who worked so faithfully," and paid special tribute to "pole-top resuscitation which was 100% effective on me."

The rescue and presentation were reviewed in *The Washington Missourian* of October 9, 1952; *Washington Citizen* of October 10, 1952; and the October, 1952, issue of the company's publication, *Union Electric News*.

WILLIAM M. SCHIEBEL (right), Duquesne Light Co., displays his EEI Medal. J. F. NICHOLSON (right) and T. E. LAZLO won EEI awards noted in a previous issue.

WILLIAM M. SCHIEBEL

Duquesne Light Company

Early in the morning of August 22, 1951, a crew of the Duquesne Light Co. was completing replacement of two No. 6 street-lighting conductors with No. 3 wire. Working near the corner of Annapolis Ave. and Madison Alley in Pittsburgh, Pa., the crew had removed the old lines and energized the new ones.

Lineman Louis Faerber was preparing to remove an old insulator pin on a side-armed pole, and Lineman Frank F. Kreutzer was working on a pole one span distant. On the ground near the two men, Lineman William M. Schiebel was

(*Continued on page* 32)

Electrical Equipment Committee Meeting

A. M. deBellis, *Chairman*

THE first meeting of the new administrative year for the Electrical Equipment Committee was held in New York City on October 13 and 14 at the Roosevelt Hotel. Sunday, October 12, the members attended a luncheon at the hotel as guests of Consolidated Edison Co. of New York, Inc., followed by an inspection trip to East River Generating Station and West 19th Street Substation. This 58th meeting of the committee was attended by 88 members and guests.

When the committee was called to order on October 13, the Chairman, A. M. deBellis, advised that the meeting would be in closed session until the latter part of the afternoon, to permit the presentation of reports on troubles. He also announced that D. W. Taylor will succeed E. F. Dissmeyer as Chairman of the System and Apparatus Troubles Division, since Mr. Dissmeyer's new assignment with Ohio Edison Co. makes it impossible for him to continue his committee chairmanship.

New companies represented on the committee are Kansas City Power and Light Co.—C. M. Lytle, Wisconsin Power and Light Co.—T. J. Scheerer, and Illinois Power Co.—J. Spengler. New additions to the committee, representing companies now cooperating, are F. W. Buck, S. C. Hoover, R. E. Neidig, F. M. Porter, R. J. Salsbury, J. Q. Wray, Jr., J. M. Geiger, W. B. Fisk, C. F. Paulus. B. VanNess, Jr., continues to serve the committee as a member of its Executive Committee.

Apparatus Troubles Division

Most of the first day was given over to the program of the Apparatus Troubles Division. On behalf of E. F. Dissmeyer, Division Chairman, R. L. Webb presented a summary of Apparatus Trouble Report No. 42 covering the period from February 15, 1952, to August 15, 1952. A total of 184 cases of trouble were reported, of which 108 or 58 per cent were classed as having major importance. The average number of cases per month was 31. This is slightly more than the average monthly figure for the previous 12-month period, which is 27 per month. Of those troubles classified as having major importance, those occurring most frequently were:

Oil Circuit Breakers	26
Generators	22
Motors	21
Voltage Regulators	29
Transformers	29
Air and Air Blast Circuit Breakers	8

Detailed reports of the more significant cases of major troubles were presented by the individual members. Each report was followed by a brief discussion of the causes and means of preventing reoccurrence of similar difficulties.

The following members reported on major equipment troubles: Generator Troubles — A. V. DeBeech, R. P. Crippen, C. C. Farrell, W. J. DeMauriac, C. T. Hughes, S. O. Schamberger, H. J. Klumb, C. L. Derrick, W. J. Lank, Messrs. Berger and Doehne; Transformer Troubles—P. M. Pennypacker, J. S. Brown, J. W. Asmann and G. M. Tatum; Circuit Breaker Troubles—C. F. Paulus, F. M. Porter, D. A. Campbell, Jr., J. Q. Wray, Jr., P. M. Pennypacker, R. P. Crippen and H. E. Deardorff. Reports on system disturbances were made by F. T. Bear, W. E. Caven, R. E. Neidig, C. W. Anthony, and H. B. Robinson.

The meeting was declared open at 4 p.m., and the manufacturers' representatives joined the meeting. Mr. deBellis announced that Dr. S. H. Mortensen, who has now retired from the Allis-Chalmers Manufacturing Co., will be replaced on the committee by F. W. Bush, Assistant Manager of Allis-Chalmers' Power Department. High tribute was paid to the excellent record of service rendered to the committee and the industry by Dr. Mortensen over the past years, and Mr. Bush was introduced.

Apparatus and Design Division

C. C. Farrell, Chairman of the Apparatus and Design Division, presided over the program of this division.

L. F. Hunt introduced D. M. MacGregor, who presented a paper entitled "Application Guide for the Grounding of Synchronous Generator Systems." The presentation was a review and expansion of the work on this subject now in process in AIEE.

J. H. Vivian discussed "Earthquake Damage in California," referring in particular to the earthquake which occurred in the Southern California area on July 21, 1952, about 5:00 a.m. The damage to power company equipment, while not causing complete system shutdown, did create wide areas of outage and considerable distribution equipment damage.

J. S. Brown advised that NEMA is considering the possibility of using aluminum as a bus or conductor material in metalclad switchgear assemblies. So far, the matter is in the development stage. The only known shipment with aluminum bus in the switchgear was made to the Aluminum Co. of America.

System Engineering Division

At the opening of the second day's meeting, H. E. Deardorff, Chairman of the System Engineering Division, presided over the program.

O. E. Charlton introduced C. M. Custer, Executive Director of the Southwest Power Pool, who presented his paper, "The Southwest Power Pool." Mr. Custer described the electrical features of the system serving the pool, which has a connected capacity of approximately 3,700,000 kw and serves a total area of approximately 700,000 square miles. The presentation included a discussion of the problems associated with the seven companies and two public authorities which are integrated with the Southwest power pool companies, which number 12 systems. This was necessary due to the closely coordinated and integrated operation in this southwest area. The financing, operating, control and contracts for interchange of power and energy were covered in a very capable manner by Mr. Custer.

G. P. Fallon introduced C. Wasserman, who presented a paper on "Transmission of Protective and Control Function Signals Via Microwave," referring in detail to actual installations in the Baltimore area. It was stated that microwave is found to be as reliable as carrier systems now used for power line protection. No serious fading of signal strength has been noted at high frequencies. The

cost of microwave equipment is comparable to carrier equipment. So far, no trouble has been experienced with temperature inversion at 960 megacycles, and since the crystals are kept warm, there has been no difficulty with frequency drift.

Operation and Maintenance Division

C. L. Derrick, Chairman of the Operation and Maintenance Division, presided over the division's program.

G. N. Pollard introduced E. E. Fancher, General Superintendent of Safety and Training of the Niagara Mohawk Power Corp., whose subject was, "People! Stations! Accidents!" Movies and slides were used to illustrate various points concerning safety while maintenance work is under way on equipment in areas likely to be dangerous. He advised that in the 10-year period, 1941 through 1950, 241 electric company people were fatally injured in stations as a result of electric shock or burn accidents. These accidents can be prevented, and Mr. Fancher did an excellent job of showing some of the means by which this can be accomplished.

In a brief progress report, J. H. Foote, Chairman of the AIEE Standards Coordinating Committee No. 8 on Coordination of Insulation, gave the results of three committee meetings which have been held since the last progress report was made to the Electrical Equipment Committee at its February 11, 1952, meeting.

R. M. Pennypacker presented a brief report, giving the recommendation of three manufacturers regarding the "Use of Inhibited Oil in Circuit Breakers."

Speaking on "RIV Tests as an Inspection and Maintenance Tool," G. P. Fallon pointed out that this application of RIV tests provided data that was of considerable value in the work of the Joint EEI-NEMA-RTMA Coordination Committee and requested assistance of Electrical Equipment Committee members through presentation of papers reporting experience with RIV tests on equipment.

S. C. Townsend introduced J. G. Noest, Assistant Inside Plant Engineer, and H. Knecht, Mechanical Plant Engineer, Consolidated Edison Co. of New York, Inc., who presented a paper which described in considerable detail "The Astoria Generating Station of Consolidated Edison Co.," a new plant in the New York City area. The first two machines, having a guaranteed maximum capability of 180 mw each, are expected to be placed in service in the summer of 1953. As unit-type machines, they will supply power directly into the 138-kv system at North Queens Substation, a short distance away.

A. V. DeBeech, Chairman of the Foreign Practice Division, presented a report on recent practices in Canada, Great Britain, Mexico and Switzerland. W. R. Way of the Shawinigan Water and Power Co. assisted in the preparation of the Canadian part of the report.

Prime Movers Committee Meeting

G. V. Williamson, *Chairman*

THE 75th Meeting of the Prime Movers Committee was held in the Hotel Martinique, New York City, December 1-2, 1952, and was scheduled to coincide with the Annual Meeting of the American Society of Mechanical Engineers. The two-day committee session was attended by 90 members and guests, and its program was highlighted by subcommittee reports and a round-table discussion.

J. M. Driscoll described a research project conducted by the Consolidated Edison Co. of New York, Inc., on the quick starting of large, high-pressure, high-temperature boilers. The results of a study by this company indicate that the quick starting of large boilers under certain circumstances has marked advantages over starting procedures generally employed. It is contemplated that future operating practices on this system will be to maximize the use of most efficient units, with supplementary boilers and turbine generators being quick started to meet increased loadings. The quick starting of boiler units after overnight shutdowns is now routine practice, as is quick starting following weekend shutdowns. As a result of careful investigation by this company, it is anticipated that quick starting periods following weekend shutdowns will eventually be reduced to one hour. This practice not only effects a financial saving due to reduced warming-up times but increases overnight repair periods by 10 to 15 per cent. Mr. Driscoll reported that station operators favor quick starting practices over conventional starting procedures, and several other companies in attendance at the meeting are investigating quick starting for their operations.

Renewed interest was evidenced on the part of several companies in the problem of fly-ash disposal, developments in which have been followed by the committee for a period of several years. One company is now selling between 20 and 25 per cent of its fly ash. Since freight rates are so important in fly-ash disposal, the committee is keeping apprised of action that may effect freight rates for fly ash that are, in some instances, unfavorable at the present time.

T. E. Crossan of the Virginia Electric and Power Co. reported on the first month's operation of a controlled circulation boiler that has recently been installed at the company's Chesterfield Station. Since being placed in operation, this unit has carried loads of from 90,000 to 110,000 lb per hr, with only minor difficulties being evidenced. Because controlled circulation boilers at high pressures promise to be lighter in weight, somewhat cheaper in cost, and less space consuming, they seem to hold considerable promise for large power generating stations at extremely high steam pressures. Committee members pointed out the safety advantage of the smaller tubes used in forced circulation units.

R. G. Call, who succeeds T. F. Finnegan as Chairman of the Power Station Chemistry Subcommittee, reported on the activities of that group and presented the decisions and recommendations approved at its November 10-11 meeting in Cincinnati. In addition, S. T. Powell, V. F. Estcourt, and F. W. Argue were assigned to work with the subcommittee on reviewing investigations conducted by individual companies in corrosion control. Such an investigation will define the status of corrosion research in the electric utility industry.

Because of several recent failures of a certain part of steam generating equipment, the committee invited representatives of a manufacturing concern to discuss the problem before the group. These representatives detailed problems involved in equipment production and recent developments that

will insure increased equipment performance. A discussion period was allowed for questions from the group.

An interesting report was presented by H. E. Macomber on an electric fence for the control of fish. Successfully used by his company at two plants, the fence consists of a 110-v wire stretched across canals from which circulating water is taken. Weighted wires spaced every 18 in. extending to the channel bottoms from the line wire harmlessly prevent the entry of fish into circulating water systems. Careful investigation proves that this system does not exterminate marine life and effectively prevents the clogging of screens and tubes by small fish.

The meeting's round-table discussion period was directed by J. M. Driscoll. Approximately 50 topics concerning power plant operation and related subjects were presented and considered, and operating experiences and practices were exchanged by electric company engineers from all parts of the country.

One important round-table topic concerned the use of automatic system load control equipment and its affect on plant as well as on units of equipment. It was reported that turbine governors frequently require adjustment when such control is adopted.

Another item of considerable importance for financial inventories concerned methods used to obtain coal densities in storage piles. Several methods are used with varying degrees of success, but an interesting new one calls for removing about a cubic foot of coal, weighing it, and measuring the hole exactly by means of a sprayed plastic liner filled with weighted water.

The problem of coal bunker fires was considered with several control methods being presented. C. Kiel reported that bunker fires have been extinguished at plants of the Long Island Lighting Co. by inserting pipes into the burning area and filling the pipes with dry ice. The generated carbon dioxide was an effective extinguisher. Other companies have permanently installed CO_2 nozzles in coal bunkers for this contingency. C. A. Miller reported that his company follows the practice of filling the corners of the bunkers with higher grade coal that is less susceptible to spontaneous combustion than coal that is filled in the remaining storage area.

During the afternoon session of the first day, the committee was pleased to welcome E. B. Ricketts, I. E. Moultrop, and A. D. Bailey, who are former members. Mr. Moultrop related some of the early history of the Prime Movers Committee and its predecessor organizations.

EEI Publications Briefly Noted

(*For additional listings, see pages* 29-30)

Turbines, Condensers and Auxiliaries, Feed-Water Heaters, Evaporators, and Deaerators

EEI Pub. No. 52-5. A Report by the Turbines and Condensers Subcommittee of the Prime Movers Committee, Edison Electric Institute. 76 pages. Price: $1.40 to members and their employees, $3.50 to nonmembers, $3.75 to foreign countries.

This report contains statements by operating companies and manufacturers on turbines, condensers and auxiliaries, feed-water heaters, evaporators, and deaerators. It also contains sections on turbine operating and outage data and simultaneous unscheduled outages of major plant equipment.

Cable Operation, 1950

EEI Pub. No. 52-10. A Joint Report of Committee on Power Distribution, Association of Edison Illuminating Companies and Transmission and Distribution Committee, Edison Electric Institute. 24 pages. Price: 70 cents to members and their employees, $1.75 to nonmembers, $1.85 to foreign countries.

This report covers operating experience with high-voltage (above 7.5 kv between phases) paper-insulated cable, joints, and terminations during 1950 as reported by 16 contributors who operated a total of more than 15,000 miles of cable.

Area Development Suggestions

EEI Pub. No. 52-12. Prepared by the Industrial Development Subcommittee, Area Development Committee. 16 pages. Price: 40 cents to members, $1.00 to nonmembers.

How to encourage industries or their agents to direct their plant location inquiries to electric companies is the subject of this publication, which presents examples of various types and styles of direct-mail pieces issued by industrial development departments of operating electric companies.

Electric Metal-Melting Furnaces

EEI Power Sales Manual, Section II—Revised, 1951. 52 pages. Price: $1.25 per copy. Quantity prices on request.

The use of the electric arc for metal melting extends back to the very beginning of the electrical era. Tracing the historical development of and trends in electric furnace melting, this publication also describes furnace types and operating characteristics. Other information which should be helpful to the power salesman includes pertinent statements by various manufacturers and discussion of fields of application in steel, iron, brass, and aluminum melting.

Resistance-Type Ovens

EEI Power Sales Manual, Chapter 35. 32 pages. Price 75 cents per copy. Quantity prices on request.

The greatly increased use of resistance-type heating units in convection ovens warrants the power salesman becoming more familiar with both present and potential load. This chapter discusses various types of ovens and their construction, whether electrically heated or heated by some competitive means. Factors involved in the selection of the right type and size oven, the advantages of electric vs. other competitive oven fuels, and applications are also presented.

AEIC-EEI-NEMA Standards for Indicating Demand Registers (Cumulative and Pointer Forms)

EEI Pub. No. MSJ-4, NEMA Pub. No. 130-1952, December, 1951. 8 pages. Price: 50 cents per copy.

These standards cover the voltage and frequency rating scale classes, demand intervals, multiplying constants, timing mechanism, and other general features of indicating demand registers required for use on watthour meters.

EEI-NEMA Standards for Distribution Fuse Links

EEI Pub. No. TDJ-110, NEMA Pub. No. 108-1952, November, 1951. 12 pages. Price: 15 cents per copy.

The scope of these standards comprises current ratings and time-current characteristics of universal fuse links for use in enclosed, open, and open link types of distribution fuse cutouts for alternating-current distribution system or circuits, 601 to 15,000 v, inclusive. These characteristics will allow and provide for the electrical interchangeability of all types and makes of fuse links which come within that scope.

Specifications for Steel Clevises for Guy Strain Insulators

EEI Pub. No. TD-21, 1952. 8 pages. Price: 10 cents per copy.

Ten Additional Companies Earn Safety Merit Awards

FROM 1942, the year of their establishment, to December 1, 1952, the Institute's Safety Merit Awards have recognized more than 237,000,000 man-hours of safe operation by electric company personnel. Included in this figure are 16,043,498 man-hours of accident-free performance achieved by ten companies or their departments or divisions since July 1, 1952, when the last periodic listing of recipients was compiled for the BULLETIN.

Among these companies were the Tampa Electric Co., Mississippi Power Co., and Mississippi Valley Public Service Co., each of which earned an award for the entire company. Companies whose departments or divisions received one or more awards included the Alabama Power Co., Carolina Power & Light Co., Fall River Electric Light Co., Kansas Gas & Electric Co., Narragansett Electric Co., and The Ohio Power Co.

Rounding out the total of Safety Merit Awards authorized since July 1 was a presentation to the Electrical Construction Bureau of the Consolidated Edison Co. of New York, Inc. This is the second construction group in the award's history to have been so honored as a unit.

The Safety Merit Award was inaugurated over ten years ago to give national recognition to electric companies for meritorious service in accident prevention, following a proposal of a subcommittee of the Accident Prevention Committee that the Institute award a Certificate of Merit to member companies which complete 1,000,000 man-hours of operation without a disabling injury.

Reservoirs for Recreation

(*Continued from page* 18)

Going up the Connecticut from the Massachusetts line, the first system plant is at Vernon. This station forms a pond 25 miles long, on which about 100 boats are kept for fishing and recreational purposes. Further upstream at the Bellows Falls Station there is another 25-mile pond with a similar number of boats, although many transient boats are also brought here from time to time.

Further up the river is the new Wilder plant, dedicated in 1950. This created a pond running 46 miles along the river. Here at Wilder, New England Power Co. has made the greatest expansion of recreational facilities for the benefit of the public. At the New Hampshire end of the dam is the Visitors' House and parking lot. The house has proved to be most interesting to the tens of thousands who have stopped there, and several picture windows command an excellent view of the river, dam, and powerhouse. On display is a scale model of the Wilder plant, together with various photographs, charts, maps, and historical and geological exhibits. There is a guide in attendance to answer questions and furnish descriptive literature about the plant, and rest room facilities are provided.

On the Vermont side of the river in a beautiful pine and white birch grove on the shore of the pond, the company has provided numerous stone fireplaces and rustic picnic tables, together with a boat landing, horseshoe pitching courts, running water, etc. The picnic areas are open to the public without charge, they are policed regularly, and fireplace wood is furnished. Just above the dam on the New Hampshire side of the river are several fireplaces and picnic tables located on a beautiful pine covered point.

As evidence that these recreational facilities are widely appreciated and used, nearly 5000 picnickers enjoyed the Wilder groves in June, 1952, alone.

Comerford Station is about 64 miles up the Connecticut River from Wilder. With 150,000 kw, it is the largest hydroelectric station in New England. Soon, however, its sister station and dam will be begun at the Littleton development, eight miles upstream. Here another 150,000-kw peaking station and dam will create a pond 11 miles long. During construction visitors will be provided with a "roadside superintendents" stand for watching the work. A similar viewing stand at Wilder attracted over 41,000 visitors during the most active construction year.

Thus along the Deerfield and Connecticut valleys and elsewhere, the reservoirs and ponds of the New England Electric System, while engaged in producing power, are also glad to add their bit in helping to make New England "the place to work, live, and play."

Japan Adopts EEI Power Survey Method

(*Continued from page* 10)

In addition, the survey report shows the capacity of heavy electric power equipment on order with Japan's manufacturers and the year of scheduled delivery. Open manufacturing capacity available for the production and delivery of additional equipment is also shown, together with estimated full manufacturing capacity. Specific types of equipment covered are generators for steam turbines and for hydraulic turbines, steam turbines, hydraulic turbines, boilers, and power transformers.

While the first survey was being undertaken, the Japan Electric Power Survey Committee was organized along the lines of the corresponding EEI committee. Serving as the group's chairman is Yasuke Anzo, Chairman of the Board of The Tokyo Electric Power Co., Inc.

The establishment of the Japanese committee comes two years after a similar system of semi-annual power surveys on the EEI pattern was set up in the countries of Western Europe, with the Organization for European Economic Cooperation in Paris conducting the studies.

Japan's adoption of the survey method makes an important addition to the free world's comparative information on electric power supply and equipment manufacture. The three areas now under regular semi-annual study represent the principal manufacturing sources of generating facilities among the nations outside the communist sphere.

In the important work which lies ahead, Japan's new Power Survey Committee has the best wishes of its EEI counterpart.

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Personals

James B. Black, President of Pacific Gas and Electric Co. of San Francisco, has been elected a member of the Board of Directors of Chemical Bank & Trust Co., New York, N. Y. Mr. Black is a director of United States Steel Corp., Southern Pacific Co., Equitable Life Assurance Society of the United States, Shell Oil Co., and Fireman's Fund Insurance Co. He also is a trustee of Stanford University.

James H. Lobban, Executive Vice President of The Detroit Edison Co., has retired after nearly 42 years of service with the company. After serving as a country schoolmaster and later as an electric company substation operator, Mr. Lobban attended the University of Michigan, graduating in 1911 with a degree in electrical engineering. He joined Detroit Edison's meter and statistical departments and held the posts of property engineer, general accountant, secretary, and vice president before his appointment as executive vice president.

Active in professional groups, Mr. Lobban was the organizer and first chairman of the Accounting Division of the Edison Electric Institute, and a vice president and director of the national EEI organization. He also organized and headed various committees of its predecessor, the National Electric Light Association.

Mr. Lobban has been replaced by **Paul W. Thompson,** who is also retiring, after 39 years with the company, to be succeeded by **Arthur S. Albright.** Other appointments include **George A. Porter** as Vice President in Charge of Engineering, Construction and Operations, **Charles R. Landrigan** as Vice President, **Stewart L. Ferguson** as Treasurer, and **Everett E. Roll** and **Elmer D. King** as Assistant General Accountant and Assistant Secretary, respectively.

Mr. Albright graduated from Ohio State University in 1912 and has been with Detroit Edison since that time. He served as superintendent of the Meter Department, Head of the Research Department, and from 1943 to 1949 as controller. In 1949 he was made treasurer and in 1952, a vice president.

Formerly an instructor in engineering courses at Cornell University, Mr. Thompson has been with the Detroit Edison since 1913, when he joined the company as an experimental engineer. In 1931 he was made chief engineer of power plants, and in 1943 became vice president in charge of engineering, construction and operations.

A graduate of Cornell University, Mr. Porter started with the company in 1925 in its Research Department. He later became assistant superintendent at the Delray Power Plant and in 1947 he was made assistant chief engineer of power plants. He became chief engineer of power plants in 1949, and manager of construction in 1952.

Mr. Landrigan started with Detroit Edison in 1912 in the Production Department at the Delray Power Plant. He spent some time in the Construction Department and then was transferred to the Control Department, where he became assistant controller in 1932 and controller in 1949. He will continue his duties as controller at the present time and will also have responsibility for all rate matters and will be in charge of dealings with the Michigan Public Service Commission.

Mr. Ferguson first worked for the company in the Electrical Construction Department in 1910. After graduation from the University of Michigan, he entered the Property Department in 1914, and his employment has been continuous since that date. In 1918 he was named property engineer and in 1943 assistant secretary of the company. In 1950, in addition to his duties as assistant secretary, he became assistant general accountant. He will be responsible for financial operations and relations with stockholders.

Mr. Roll came to the company in 1928 upon graduation from the University of Illinois. In 1942 he became assistant supervisor of the General Accounting Department, in 1949 assistant to the general accountant, and in 1952 an assistant secretary.

Mr. King was employed in the Property Department of the company in 1915 after graduation from the University of Michigan. In 1918 he was made assistant property engineer and in 1950 was advanced to his present position as property engineer. His duties as an assistant secretary will be in addition to those of property engineer.

Harry M. Miller, Vice President of the Columbus and Southern Ohio Electric Co. since 1951, has been named Executive Vice President of the company.

A graduate of Ohio Wesleyan University and Ohio State University, College of Law, Mr. Miller served as prosecuting attorney of Gallia County from 1929 to 1935. He was appointed executive secretary to Gov. John W. Bricker in 1939, and in 1941 became a member of the Ohio Public Utilities Commission, serving as chairman from 1947 to 1949. In 1950 he was named president of the National Association of Railroad and Utility Commissioners.

Alva B. Brown, Executive Vice President and General Manager of Southern Indiana Gas & Electric Co., has been elected President of the Indiana Electric Association. Mr. Brown has served his company for 26 years. He was named to his present post in September, after serving as vice president and operating manager since 1949.

Harrison G. Fish, Southbridge Manager of the Worcester County Electric Co. for the past four years, has been appointed Vice President of the Northampton Electric Lighting Co. Mr. Fish joined the New England Gas & Electric Association in 1933 and later served with the Fall River Electric Light Co. He became lighting engineer for Narragansett Electric Co. in 1943, and was made assistant to the manager of the Uxbridge Division of Worcester Suburban Electric Co. in 1946.

Robert Brandt, Assistant Vice President of the New England Power and Connecticut River Power Companies, has been appointed head of power supply, planning, and dispatching for wholesale companies of the New England Electric System.

Mr. Brandt joined the system in 1926 as an engineering assistant, advancing to the post of engineer in 1942. He spent some time serving as chief of the Coordination and Planning Branch of the Defense

Electric Power Administration and later as director of the Power Supply Division. He returned to the New England company early in 1952.

M. Edwin Wiggins, Assistant Treasurer of Alabama Power Co. since 1947, has been appointed Treasurer of the company. **Robert J. Dendy** and **Samuel L. Chesnut,** who were elected Assistant Treasurers at the same time, will continue to serve in their former capacities as cashier and paymaster, respectively, in addition to their new duties.

Mr. Wiggins joined Alabama Power in 1917 as a clerk and subsequently served in such posts as bookkeeper, local auditor, assistant cashier, assistant manager of the Investment Department, credit manager, and head of section for credits and collections.

Mr. Dendy was employed by the company in 1925 as a clerk, became assistant paymaster in 1937, and general cashier in 1946.

Joining the company in 1916 as a groundman, Mr. Chesnut became payroll accountant in 1917 and paymaster in 1922.

Raymond J. Trainor has been named Assistant Treasurer of the Philadelphia Electric Co. Starting as an assistant transfer clerk in 1916, he has since served the company in various accounting and financial posts. He was named assistant supervisor in the Treasurer's Department in 1928 and supervisor of banking in 1940, the position he held at the time of his recent appointment.

James R. Koch has been named Southern Division Engineer for Pennsylvania Electric Co. A graduate of Villanova College, Mr. Koch has been employed by Penelec and associated companies since 1924, when he was named assistant engineer for General Construction Corp. In 1928 he was appointed superintendent of engineering for the Manila Electric Co., Manila, P. I., where he served until the Japanese invasion. Following war-time internment in the Santo Tomas Camp in Manila, Mr. Koch rejoined Penelec in 1946 as an analyst in the Rate Department, where he served until his present assignment.

Representatives of Southeastern Companies Attend Georgia Power Home Service Meeting

ADEQUATE wiring, planned lighting, EEI sales aids, and the health home were among the subjects discussed at the Home Service Conference held recently in Atlanta by the Georgia Power Co. Attended by representatives of Southeastern utilities and other organizations concerned with promoting the benefits of electrical living, the two-day meeting was presided over by Miss Elizabeth Parker, Home Service Director of the company.

C. M. Wallace, Sales Manager and Assistant to the Vice President in Charge of Sales, officially greeted the gathering, and Miss Parker, in a talk on "Some Tangible Results of Home Service," detailed the many services rendered by the company's home economists. Though it is impossible to place a cash valuation on all of the phases of home service, Miss Parker said, "it is interesting to note that the company receives, very conservatively, 50 per cent annual return on its investment in home service."

Stressing that "convenience is in the wiring," Miss Betty Adams, Home Economist in the Jonesboro District, discussed low-voltage wiring installations, and Suzanne Merk, Athens District Home Economist, spoke on "Good Lighting—Good Living," describing how proper lighting helps make the home mechanically convenient, economically sound, and artistically satisfying.

The film, "Young Man's Fancy," developed as part of the Mother-Daughter Program of the EEI Electric Kitchen and Laundry Committee, was shown by Howard Wilson, Merchandise Manager, who also described a 16-page comic book prepared by the committee to tell the electric appliance story. Georgia Power hopes to offer the film for territory-wide distribution in the near future.

Miss Olive Massey, Home Equipment Specialist, discussed and displayed the new and informative literature available from the EEI Home Service Committee. She not only detailed the contents of each booklet but offered many suggestions as to how it could be used to maximum advantage. Also on display were the EEI Prize Awards won by Georgia Power's Home Service Department.

After dinner on the first evening of the meeting, George Brodnax, Vice President and Atlanta Division Manager, gave his "Impressions of the British Isles," gained during a seven-week tour of power houses of the British Electric Authority. Mr. Brodnax showed pictures of ancient castles converted to power stations, described privations presently being undergone by British subjects, and cautioned that Americans must be continually vigilant to protect their heritage.

Concluding the meeting was the Atlanta Division's presentation by Miss Emily Alexander, Home Service Supervisor, whose talk, "Home Service and Health Home," pointed out that one in eight homemakers, nationally, is handicapped in some respect. By means of a special exhibit, Miss Alexander displayed many accessories designed to be of particular help to handicapped women and presented a pattern-lecture, enlivened with color slides.

Resuscitation Awards

(*Continued from page* 24)

walking toward the line truck to get a drink of water.

Suddenly the crew heard a noise that sounded like a short circuit, and Foreman Jim Hood shouted that Faerber was caught in the wires. In reaching for the insulator pin, the lineman had contacted a phase wire with his left arm above his rubber glove and the neutral with his left shoulder.

Schiebel immediately climbed up under the injured man, who was unconscious and not breathing and was hanging in his safety belt in such a manner that pole-top resuscitation could not be administered in the normal fashion. Fastening his safety around a vertical steel brace, Schiebel placed his arms around Faerber's limp form and began treatment, continuing it for about five minutes until the victim was able to breathe unassisted.

In the meantime, Kreutzer had joined Schiebel at the scene of the accident and, when Faerber regained consciousness, passed a handline through the patient's "D" rings to help lower him to the ground. Faerber was then taken to the hospital, where he was treated for severe burns which necessitated the amputation of his left arm.

William M. Schiebel was presented an EEI Medal and Frank F. Kreutzer a Certificate of Assistance in ceremonies conducted by W. G. Jens, Duquesne Light's Vice President in Charge of Operations, on June 11, 1952. A story on the awards appeared in the *Pittsburgh Post-Gazette* on the following day.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

OFFICERS

B. L. ENGLAND, *President*.....Atlantic City Electric Co., Atlantic City, N. J.
WALTER H. SAMMIS, *Vice President*.....Ohio Edison Co., Akron, Ohio
H. S. BENNION, *Vice President and Managing Director*....420 Lexington Avenue, New York, N. Y.
H. S. SUTTON, *Treasurer*.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
A. B. MORGAN, *Secretary and Assistant Managing Director* 420 Lexington Avenue, New York, N. Y.

BOARD OF DIRECTORS

(Terms Expiring 1953)

A. M. BEEBER.....Rochester Gas and Electric Corp., Rochester, N. Y.
WALKER L. CISLER.....The Detroit Edison Co., Detroit, Mich.
C. P. CRANE.....Consolidated Gas Electric Light and Power Co. of Baltimore, Baltimore, Md.
E. W. DOEBLER.....Long Island Lighting Co., Mineola, N. Y.
M. F. GILL .....Kansas Gas and Electric Co., Wichita, Kan.
N. B. GUSSETT.....Iowa Power & Light Co., Des Moines, Iowa
D. S. KENNEDY.....Oklahoma Gas and Electric Co., Oklahoma City, Okla.
L. M. KLAUBER.....San Diego Gas & Electric Co., San Diego, Calif.
R. H. KNOWLTON.....The Connecticut Light & Power Co., Hartford, Conn.
E. L. LINDSETH.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
H. T. PRITCHARD.....Indianapolis Power & Light Co., Indianapolis, Ind.
K. M. ROBINSON .....The Washington Water Power Co., Spokane, Wash.
L. V. SUTTON .....Carolina Power & Light Co., Raleigh, N. C.
H. C. THUERK.....New Jersey Power and Light Co., Dover, N. J.
W. O. TURNER .....Louisiana Power and Light Co., New Orleans, La.

(Terms Expiring 1954)

ERNEST R. ACKER.....Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
HARLLEE BRANCH, JR.....Georgia Power Co., Atlanta, Ga.
ROBERT P. BRIGGS.....Consumers Power Co., Jackson, Mich.
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STUART COOPER .....Delaware Power & Light Co., Wilmington, Del.
D. C. LUCE.....Public Service Electric and Gas Co., Newark, N. J.
M. S. LUTHRINGER.....Central Illinois Public Service Co., Springfield, Ill.
W. W. LYNCH.....Texas Power & Light Co., Dallas, Tex.
C. E. OAKES.....Pennsylvania Power & Light Co., Allentown, Pa.
HAROLD QUINTON.....Southern California Edison Co., Los Angeles, Calif.
T. E. ROACH.....Idaho Power Co., Boise, Ida.
H. B. SARGENT.....Arizona Public Service Co., Phoenix, Ariz.
L. M. SMITH.....Alabama Power Co., Birmingham, Ala.
MCGREGOR SMITH.....Florida Power & Light Co., Miami, Fla.
D. E. WASHBURN.....Boston Edison Co., Boston, Mass.

(Terms Expiring 1955)

A. D. BARNEY.....The Hartford Electric Light Co., Hartford, Conn.
G. M. GADSBY.....Utah Power & Light Co., Salt Lake City, Utah
A. H. KEHOE.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
ALLEN S. KING.....Northern States Power Co., Minneapolis, Minn.
EARLE J. MACHOLD.....Niagara Mohawk Power Corp., Syracuse, N. Y.
PAUL B. MCKEE.....Pacific Power and Light Co., Portland, Ore.
S. C. MCMEEKIN.....South Carolina Electric and Gas Co., Columbia, S. C.
GROVER C. NEFF.....Wisconsin Power and Light Co., Madison, Wis.
P. H. POWERS.....West Penn Power Co., Pittsburgh, Pa.
R. G. RINCLIFFE.....Philadelphia Electric Co., Philadelphia, Pa.
WALTER H. SAMMIS.....Ohio Edison Co., Akron, Ohio
C. V. SORENSON.....Indiana & Michigan Electric Co., Ft. Wayne, Ind.
N. R. SUTHERLAND.....Pacific Gas and Electric Co., San Francisco, Calif.
J. B. THOMAS.....Texas Electric Service Co., Ft. Worth, Tex.
ALLEN VAN WYCK.....Illinois Power Co., Decatur, Ill.

Executive Committee

R. G. Rincliffe, C. P. Crane, A. H. Kehoe, R. H. Knowlton, E. L. Lindseth, D. C. Luce, C. E. Oakes, P. H. Powers, L. V. Sutton.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

(Continued)

ADVISORY COMMITTEE 1952-1953

D. C. BARNES.....Virginia Electric and Power Co., Charlottesville, Va.
E. F. BARRETT..Long Island Lighting Co., Mineola, N. Y.
W. C. BECKJORD.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
J. B. BLACK.....Pacific Gas and Electric Co., San Francisco, Calif.
GEORGE H. BLAKE....Public Service Electric and Gas Co., Newark, N. J.
B. F. BRAHENEY.....Northern States Power Co., Minneapolis, Minn.
PRENTISS BROWN..The Detroit Edison Co., Detroit, Mich.
CURTIS E. CALDER.....Electric Bond and Share Co., New York, N. Y.
THOMAS G. DIGNAN....Boston Edison Co., Boston, Mass.
EDGAR H. DIXON.....Middle South Utilities, Inc., New York, N. Y.
H. P. LIVERSIDGE.....Philadelphia Electric Co., Philadelphia, Pa.
J. E. LOISEAU.....Public Service Co. of Colorado, Denver, Colo.
J. W. MCAFEE.....Union Electric Co. of Missouri, St. Louis, Mo.
P. H. MCCANCE....Duquesne Light Co., Pittsburgh, Pa.
C. B. MCMANUS.....The Southern Co., Inc., Atlanta, Ga.
I. L. MOORE.....New England Electric System, Boston, Mass.
W. C. MULLENDORE....Southern California Edison Co., Los Angeles, Calif.
WILLIAM SCHMIDT, JR., Consolidated Gas Electric Light and Power Co. of Baltimore, Baltimore, Md.
H. R. SEARING, Consolidated Edison Co. of New York, Inc., New York, N. Y.
PHILIP SPORN...American Gas and Electric Service Corp., New York, N. Y.
E. S. THOMPSON....The West Penn Electric Co. (Inc.), New York, N. Y.
G. W. VANDERZEE.....Wisconsin Electric Power Co., Milwaukee, Wis.
J. R. WHITING....Consumers Power Co., Jackson, Mich.

CHAIRMEN OF EDISON ELECTRIC INSTITUTE COMMITTEES (1952-1953)

ACCOUNTING

Accounting Division Executive, E. L. CASSADY.....Indianapolis Power & Light Co., Indianapolis, Ind.
Application of Accounting Principles.....To be appointed.
Coordinator of Customer Activities, M. J. WALSH.....Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
Customer Accounting, G. F. HIGGINS.....The Detroit Edison Co., Detroit, Mich.
Customer Collections, D. M. ARNOLD.....Pennsylvania Power Co., New Castle, Pa.
Customer Relations, C. J. BERNER.....Wisconsin Electric Power Co., Milwaukee, Wis.
Depreciation Accounting, G. T. LOGAN.....Philadelphia Electric Co., Philadelphia, Pa.
General Accounting, A. R. ST. BERNARD.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Internal Auditing, A. I. RUSSAK.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
Plant Accounting and Records, E. D. KING.....The Detroit Edison Co., Detroit, Mich.
Taxation, L. F. SCHOLLEY.....The Cleveland Electric Illuminating Co., Cleveland, Ohio

COMMERCIAL

Commercial Division General, J. R. HARTMAN.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
Commercial Sales Section, S. S. SANSBURY.....Union Electric Co. of Missouri, St. Louis, Mo.
Farm Section, E. D. SMITH.....The Dayton Power and Light Co., Dayton, Ohio
Industrial Power and Heating Section, MAXWELL COLE.....Philadelphia Electric Co., Philadelphia, Pa.
Residential Section, R. J. MILLER.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Special Service Section, J. M. STEDMAN.....Pennsylvania Power & Light Co., Allentown, Pa.

ENGINEERING

Engineering Division General, E. H. SNYDER.....Public Service Electric and Gas Co., Newark, N. J.
Electrical Equipment, A. M. DEBELLIS.....Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
Hydraulic Power, HIBBERT HILL.....Northern States Power Co., Minneapolis, Minn.
Meter and Service, F. A. REDDING.....Southern California Edison Co., Alhambra, Calif.
Prime Movers, G. V. WILLIAMSON.....Union Electric Co. of Missouri, St. Louis, Mo.
Transmission and Distribution, J. A. PULSFORD.....Public Service Electric and Gas Co., Newark, N. J.

GENERAL

Accident Prevention, W. F. BROWN.....Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
Area Development, J. FRANK GASKILL.....Philadelphia Electric Co., Philadelphia, Pa.
Codes and Standards, D. C. LUCE.....Public Service Electric and Gas Co., Newark, N. J.
Electric Power Survey, WALKER L. CISLER.....The Detroit Edison Co., Detroit, Mich.
Financing and Investor Relations, H. H. SCAFF.....Ebasco Services Inc., New York, N. Y.
Industrial Relations, F. E. VERDIN.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Insurance, I. M. CARPENTER.....Ebasco Services Inc., New York, N. Y.
Legal, T. JUSTIN MOORE.....Virginia Electric and Power Co., Richmond, Va.
Membership, E. S. THOMPSON.....The West Penn Electric Co. (Inc.), New York, N. Y.
Prize Awards, HARRY RESTOFSKI.....West Penn Power Co., Pittsburgh, Pa.
Purchasing and Stores, C. F. OGDEN.....The Detroit Edison Co., Detroit, Mich.
Rate Research, I. L. CRAIG.....Philadelphia Electric Co., Philadelphia, Pa.
Statistical, WALLACE GODARD.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Transportation, D. K. WILSON.....Niagara Mohawk Power Corp., Albany, N. Y.

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